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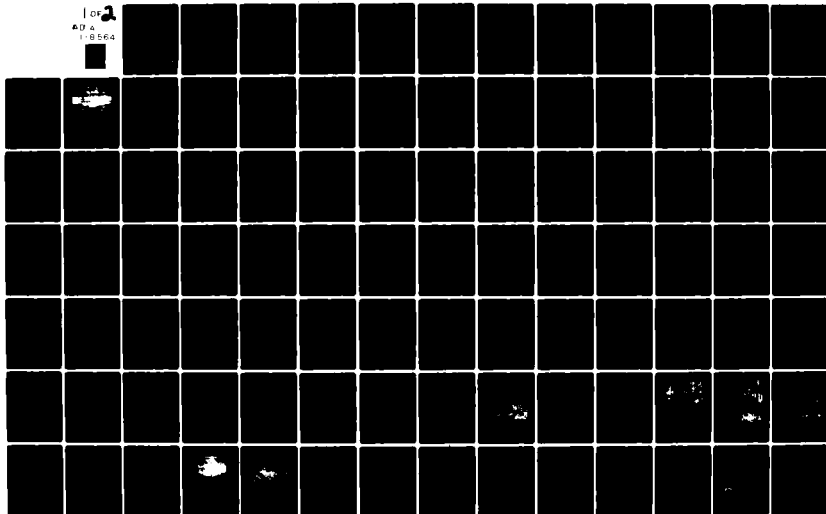
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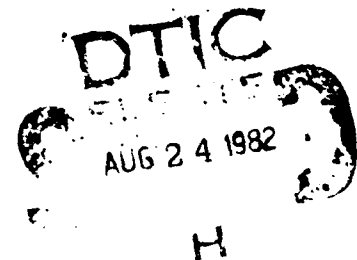
CULTURAL RESOURCES SURVEY OF FOURTEEN
MISSISSIPPI RIVER LEVEE AND REVETMENT ITEMS

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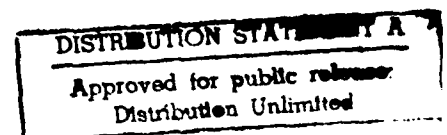
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16. Abstract (Limit: 200 words) In May and June of 1981, Iroquois Research Institute performed a cultural resources survey of fourteen Mississippi River levee and revetment items in Iberville, St. James, St. Charles, Orleans, St. Bernard and Plaquemines Parishes, Louisiana. The project included a prehistoric and historic background study and literature search, a geomorphological analysis of the survey items, and a systematic archeological survey. Fourteen historic sites were inventoried during the systematic survey. They included a catwalk, a furnace, a wooden platform, two sites containing brick house supports, a residential complex, a canal lock, two possible pump house sites, a navigation light base, a riverside railroad terminal, and a subsurface site. No prehistoric sites were discovered. Recommendations were made for two sites, one containing 18th-19th century ceramics, and the other a canal lock. The ceramic site was evaluated as potentially eligible for nomination to the National Register of Historic Places. Further testing was recommended to determine its potential eligibility. At the canal lock, the Institute recommended the placement of an historic marker.				
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TABLE OF CONTENTS

I.	INTRODUCTION	1
	Project Scope	1
	Disposition of Background Data	1
II.	ENVIRONMENT AND GEOMORPHOLOGY	4
	Modern Environmental Setting	4
	Geomorphology and Archeological Potential	7
	Prehistoric Environments	26
III.	PREHISTORIC AND HISTORIC BACKGROUND	29
	Methodology	29
	Previous Archeological Work	31
	Previously Recorded Sites	33
	Cartographic Review	35
	Prehistoric Cultural Development and Ethnohistory of the Study Area	35 36
	Historic Overview	41
	Iberville Parish	45
	St. James Parish	47
	St. Charles Parish	48
	Orleans Parish	50
	St. Bernard Parish	57
	Plaquemines Parish	57
IV.	PROJECT METHODOLOGY AND FIELD CONDITIONS	67
	Research Objectives	67
	Survey Expectations	67
	Field Survey Conditions	70
	The Pedestrian Survey	75
	Subsurface Testing	76
	Site Definition	78
	Site Verification Procedures	80
	Laboratory Methodology	81

Table of Contents (Continued)

V.	SURVEY RESULTS	85
	Overview	85
	Site Descriptions	86
	WP5-1	86
	16OR68	87
	16SB104	91
	WP5-5	92
	16PL85	92
	WP5-7	96
	16SB105	97
	16SC47	98
	16SJ32	99
	16SJ33	101
	16PL86	102
	16SB106	103
	16PL87	104
VI.	SIGNIFICANCE	106
VII.	RECOMMENDATIONS	115
	Recommendations for Historic Preservation	115
	Recommendations for Further Research	116
	BIBLIOGRAPHY	121
	Personal Communications	139
	APPENDIX A	A-1
	APPENDIX B	B-1
	APPENDIX C	C-1

List of Tables

Table 1.	Work Packet 5 Survey Items	3
Table 2.	Archives, Libraries and Collections Consulted	30
Table 3.	Previously Recorded Sites within 1.5 Miles of the Study Areas	34

Table of Contents (Continued)

List of Tables

Table 4.	Dominant Fluvial Processes and Distribution of Testing in Work Packet 5 Survey Items	77
Table 5.	Survey Results	85
Table 6.	Historic Ceramics from 16PL85.	94
Table 7.	Summary of Sites Discovered in the Batture by Iroquois Research Institute for Work Packets 2, 3, 4 and 5	117
Table 8.	Summary of Batture Surveys	119

List of Plates

Plate 1.	Study Area Map	2
Plate 2.	Typical Willow Forest	6
Plate 3.	Section of an Anonymous 1723 Map	50
Plate 4.	Revetment Remains	69
Plate 5.	Typical Batture Survey Conditions.	72
Plate 6.	Mature Vegetation at Rich Bend	73
Plate 7.	Pasture at Bayou Lamoque	73
Plate 8.	Water-Filled Borrow	74
Plate 9.	Typical Auger Poring Location.	78
Plate 10.	Log Pile Located Along the Batture Forest	79
Plate 11.	Furnace Site 16OR68	87
Plate 12.	Ceramic Artifacts from Site 16OR68	90
Plate 13.	Brick Pier at Site 16SB104	91

Table of Contents (Continued)

List of Plates

Plate 14.	Brick Pier at Site 16PL85	92
Plate 15.	Transfer Printed Sherd from Site 16PL85	95
Plate 16.	Metal Chain from Site 16PL85	95
Plate 17.	Southern Residential Structure at Site WP5-7	96
Plate 18.	Lake Borgne Canal Lock, Site 16SB105	97
Plate 19.	Lake Borgne Canal Lock, Site 16SB105	98
Plate 20.	Concrete Platform, Site 16SC47	99
Plate 21.	Brick Structures at Site 16SJ32	101
Plate 22.	Brick and Cinder Block Scatter at Site 16SJ33	102
Plate 23.	The Seatrain Terminal, Site 16PL87	105
Plate 24.	Sugar House at Stanton Plantation	112
Plate 25.	Stanton Plantation House Threatened by Inundation	113

List of Figures

Figure 1.	Shoreline Changes, Manchac Revetment	11
Figure 2.	Shoreline Changes, Rich Bend Revetment	12
Figure 3.	Shoreline Changes, Belmont Revetment	13
Figure 4.	Shoreline Changes, Luling Revetment	14
Figure 5.	Shoreline Changes, Cutoff Revetment	15
Figure 6.	Shoreline Changes, Poydras Revetment	16
Figure 7.	Shoreline Changes, Scarsdale Revetment	17
Figure 8.	Shoreline Changes, Concession Levee Enlargement	19
Figure 9.	Shoreline Changes, Live Oak Levee Enlargement	20

Table of Contents (Continued)

List of Figures

Figure 10.	Shoreline Changes, Alliance Revetment	21
Figure 11.	Shoreline Changes, Point Michel Revetment	22
Figure 12.	Shoreline Changes, Port Sulphur Upstream Segment . . .	24
Figure 13.	Shoreline Changes, Port Sulphur Downstream Segment . .	24
Figure 14.	Shoreline Changes, Bayou Lamoque Revetment	25
Figure 15.	Shoreline Changes, Tropical Bend Revetment	26
Figure 16.	Plan and Elevations of Site 16OR68	89

CHAPTER I

INTRODUCTION

Project Scope

Under contract with the U.S. Army Corps of Engineers, New Orleans District, Iroquois Research Institute conducted an intensive cultural resources survey of 14 items along the Mississippi River north and south of New Orleans as illustrated in Plate 1. The surveys were completed for Work Packet 5 of Contract No. DACW29-80-D-0107, entitled "Cultural Resources Survey of Fourteen Mississippi River Levee and Revetment Items." The names, locations, and areas of the 14 items are summarized in Table 1.

Four of the survey items, Manchac, Rich Bend, Belmont and Luling, are located above New Orleans; the remaining 10 items are situated below New Orleans. The U.S. Army Corps of Engineers plans to construct concrete revetments at all the items except Concession and Live Oak where levee enlargements are planned. With the exception of the Bayou Lamoque revetment, the surveys were conducted within the batture, the area between the riverside toe of the levee and the river's edge. At the Bayou Lamoque item, where there was no levee, the project right-of-way consisted of a 300 feet wide corridor with the river on one side, stretching the entire length of the item.

The level of investigation for this project is defined as an "intensive cultural resources survey for the purpose of locating historic and prehistoric cultural remains, and assessing their significance" (Contract No. DACW29-80-D-0107). To achieve this objective Iroquois Research Institute performed an intensive archeological, cartographic and historic literature and records review and a systematic archeological field survey of each item's right-of-way. Archeological and historical remains found during the survey have been evaluated against the significance criteria promulgated by the Department of Interior regulation 36 C.F.R. part 60.4, dated 16 November 1981.

This investigation was carried out as required by the National Environmental Policy Act of 1969, Public Law 91-190; "Protection and Enhancement of the Cultural Environment," Executive Order 11593; the Procedures for the Protection of Historic and Cultural Properties, 36 C.F.R. 800; and the National Historic Preservation Act of 1966, Public Law 89-665.

Disposition of Background Data

In addition to this technical report, cultural resource data gathered during Iroquois Research Institute's survey of the items in Work Packet 5 have been submitted to the U.S. Army Corps of Engineers, New Orleans District, as a separate appendix. This material includes (1) locational maps of the cultural resources inventoried within each item, (2) completed site survey forms used during the field investigations, and (3) detailed summaries of specific survey information within each item. This specific information has been deleted from the technical report in order to avoid vandalism to the identified cultural resources.

PLATE 1

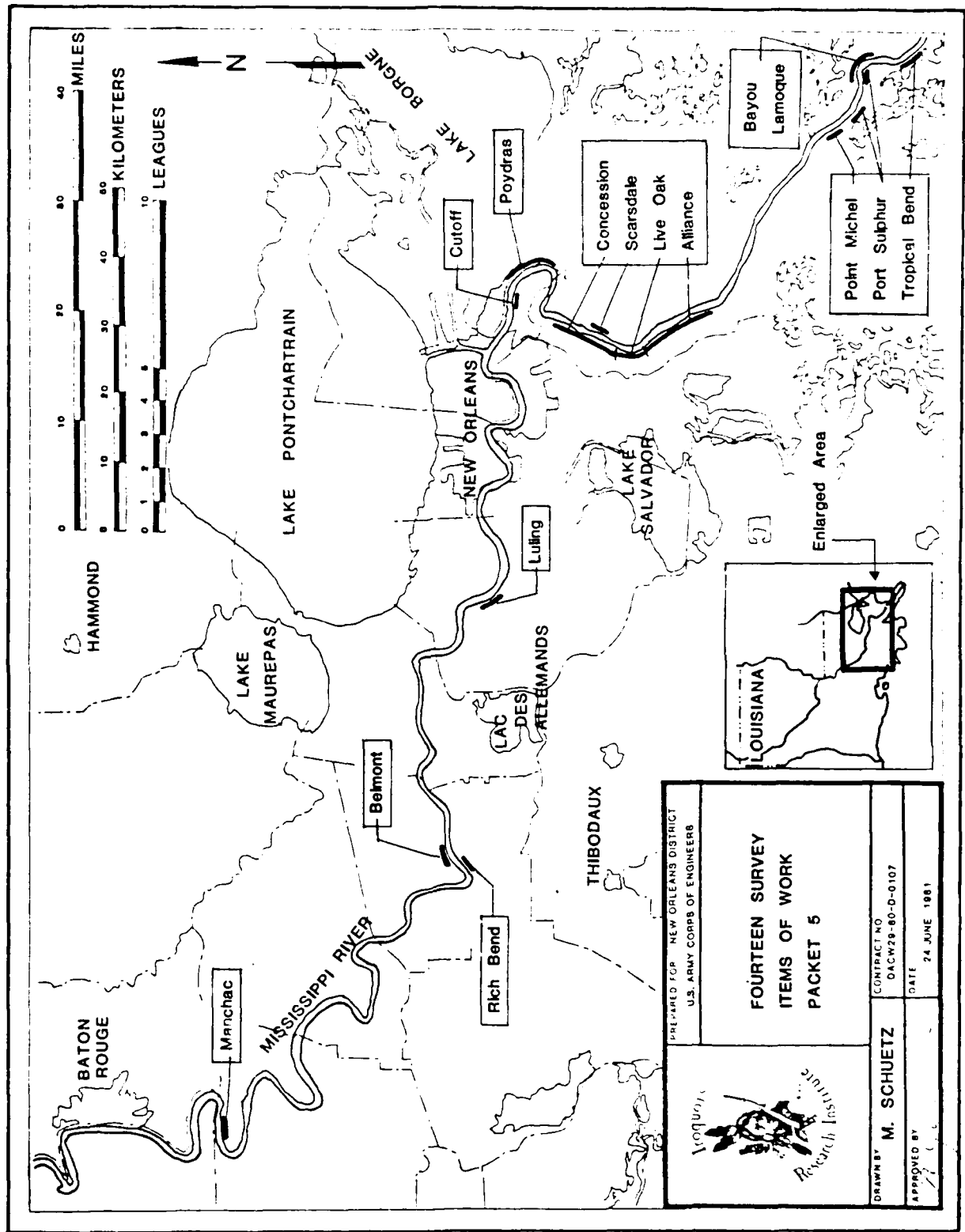


TABLE 1
WORK PACKET 5 SURVEY ITEMS

	Item	River Mile	Levee Station	Acres	Survey Area
1.	Manchac Revetment	211.5- 213.8-L	--	145	Batture
2.	Rich Bend Revetment	152.5- 155.4-R	--	86	Batture
3.	Belmont Revetment	150.7- 151.7-L	--	81	Batture
4.	Luling Revetment	121.7- 122.5-R	--	87	Batture
5.	Cutoff Revetment	86.8- 88.2-R	--	53	Batture
6.	Scarsdale Revetment	73.0- 74.3-L	--	31	Batture
7.	Poydras Revetment	81.8- 85.6-L	--	203	Batture
8.	Concession Levee Enlargement	72.5- 77.5-R	244+50- 551+00	167	Batture
9.	Live Oak Levee Enlargement	66.0- 72.5-R	551+00- 828+00	123*	Batture
10.	Alliance Revetment	62.6	--	194	Batture
11.	Point Michel Revetment	41.0- 44.3-R	--	68	Batture
12.	Port Sulphur Revetment	35.2- 37.5-R	--	42	Batture
13.	Bayou Lamoque Revetment	32.4- 34.7-L	--	105	300' Wide Corridor from Riverbank
14.	Tropical Bend Revetment	29.8- 30.7-R	--	30	Batture

TOTAL 1,415

*Does not include 40 acre overlap with Alliance.

CHAPTER II

ENVIRONMENT AND GEOMORPHOLOGY

Modern Environmental Setting

Southern Louisiana lies within the Humid Subtropical climatic zone. The general low relief produces little variation in the regional climate and local microclimates are rare. The area is situated between two major global climatic controls: the Southern North-Atlantic Ocean Anticyclone and the Middle Latitude Cyclone. The interplay between these two systems produces extremely variable weather patterns. Throughout most of the year, the region is dominated by southerly flows of warm moist air, creating a generally warm and humid climate. Because of the absence of significant terrain barriers, however, surges of cold air associated with middle latitude cyclonic patterns occasionally penetrate the region in the winter (Lower Mississippi Region Comprehensive Study Coordinating Committee 1974:13-14).

Average annual precipitation, based upon climatic data from the New Orleans Moisant Airport station, is 136.9 centimeters (53.9 inches). The monthly high occurs during July, averaging 17.1 centimeters (6.72 inches); the monthly low occurs in October, averaging 7.2 centimeters (2.84 inches). With extremely rare exceptions, all precipitation falls as rain (Lower Mississippi Region Comprehensive Study Coordinating Committee 1974:26).

The mean annual temperature for the region is 20.3 degrees Celsius (68.6 Fahrenheit). The warmest month of the year is August when temperatures average 27.7 degrees Celsius (81.9 Fahrenheit). The coldest month of the year is January, the temperature averaging 12.5 degrees Celsius (54.6 Fahrenheit). The average date for the first freeze is December 10th and for the last freeze, February 18th. The growing season averages 295 days (Lower Mississippi River Comprehensive Study Coordinating Committee 1974:46).

Local plant and animal communities are strongly influenced by the age and specific characteristics of sediment making up the meander belts of the Mississippi River at specific localities. Regionally, the entire study area falls within the Oak-Gum-Cypress Forest ecosystem. This is primarily a Mississippi Alluvial Valley ecosystem affected to a greater extent by hydrological and geophysical conditions than by climatological factors.

The ideal Oak-Gum-Cypress Forest is a climax forest associated with the sediment and hydrological cycle of relatively stable areas away from the active course of the river. True Oak-Gum-Cypress Forests are more characteristic of nearby backswamp areas than of the recent levee and point bar deposits of the Work Packet 5 survey items.

From the time when a sedimentary deposit along the Mississippi first becomes a terrestrial habitat until it eventually reaches some climax condition more or less in equilibrium, the vegetation undergoes successive developmental stages (Shelford 1963:94-99). Initially, new point bars are colonized by sandbar willows along with several herbaceous species. Subsequent stages are formed by a transitional cottonwood-willow, sugarberry-elm-sweetgum forest, and eventually a mature floodplain forest on higher levee positions if flooding is infrequent and of short duration. In the Deltaic Plain, the relative instability of the river course, frequent flooding, and high rates of subsidence often hinder the development of a climax floodplain forest.

Most areas of batture have a vegetation that is only in the first or second stages of the ecological succession from initial willow colonization to either the Oak-Gum-Cypress Forest or the Floodplain Oak-Hickory Forest of Shelford (1963:94-105). The considerable portions of the batture with a predominantly black willow (Salix nigra) vegetation are frequently inundated for much of the year and can best be described as an edaphic climax where several generations of willow may succeed one another before additional sedimentation raises the level of the ground to a point where flooding is less frequent and prolonged, and less water tolerant species can predominate. The areas of batture with predominantly willow vegetation often have a few scattered cottonwood (Populus deltoides and Populus heterophylla), sycamore (Platanus occidentalis), and hackberry (Celtis laevigata) trees. Survey items in Work Packet 5 were generally characterized by this vegetation. A typical willow forest is illustrated in Plate 2.

Both black willow (Salix nigra) and sandbar willow (Salix interior) are commonly the first woody plant species to colonize frequently flooded newly deposited sediments and disturbed lands. Thus, the presence of willows is one of the best indicators of recent disturbance as well as the frequency and duration of inundation. The co-occurrence of immature willow vegetation and mechanically mixed soil profiles in some batture areas is indicative of the disturbance accompanying levee and revetment construction and, in some localities, the maintenance of on-shore anchorage and loading areas.

The understory in the batture willow forest consists of both perennial and annual vines and several annual herbs. Poison ivy, grape and trumpet creeper are the predominant perennial vines. Groundnut (Apios americana), buckwheat vine (Brunnichia cirrhosa) and sandvine (Ampelamus albidus) are locally common vines. Cocklebur, giant ragweed and clearweed are common annual herbs. Elderberry is the most common herb associated with willow trees.

Where riverbank deposition can eventually create a higher and drier environment for successional vegetation other than willow, a mixed floodplain forest of hackberry, cottonwood, pecan, bitter pecan, water oak, ash, elm and boxelder is characteristic. The understory in these areas is composed of poison ivy, trumpet creeper, grape and Virginia creeper. Although less frequent in Work Packet 5, some areas such as the downstream segment of Live Oak and the upstream areas of Poydras, Luling



Plate 2. Willow vegetation typical of the Mississippi River batture. This forest is located at Shingle Point. English Turn bend is in the background. No. 1584-7A.

and Rich Bend are characterized by more mature forest. Downstream Poydras, because the levee there was built further inland than at most of the study areas, has more mature vegetation undisturbed by construction activities.

Fresh water marshes and cypress swamps do not generally occur within the immediate survey area, but are limited to backswamp subsidence locales away from the active river channel. These environments support a wide variety of terrestrial and aquatic resources, however, and have played a significant role in regional ecology and cultural adaptation to the area.

Terrestrial animal species inhabiting the Lower Mississippi Valley during the early historic period probably included black bear, puma, several varieties of deer, cottontail and swamp rabbit, opossum, raccoon, muskrat, bobcat, skunks and bats (Shelford 1963:100). Fresh and saltwater marshes of coastal Louisiana are the seasonal homes of one of the largest concentrations of migratory waterfowl in the world, in addition to being the regular home of a wide variety of local bird species (Shelford 1963:100). Significant local reptilian species include the American

alligator and water moccasin. A wide variety of fish and mussels occur in the general study area, often adapted to very narrow salinity variations. Fish and mussels have been a significant resource for human inhabitants of the lower Mississippi Valley and Delta throughout the period of man's occupancy in the region (Davis et al. 1979:23).

Soils

The unconsolidated sediments and soils of southern Louisiana range from clays to medium textured sands and loamy sands. At some locations the sediments are well sorted clays and nearly pure sands of uniform particle size. Most soil profiles show natural stratification of coarse and fine materials in the top meter, indicating that the depositional environment has changed considerably over short periods of time. The presence of clay strata is indicative of deposition in relatively slow moving or standing water while the well sorted sands indicate relatively swift flowing flood waters. At other locations the occurrence of loams indicates poor sorting.

In the current system of soil classification for making and interpreting soils surveys (U.S. Department of Agriculture 1973, 1975), the overwhelming majority of soils in the study areas are classified as Entisols and Inceptisols. In addition, areas of undifferentiated alluvium occur along the river. Entisols have little or no profile development and Inceptisols are young soils with only the beginnings of profile development. Soil profile development involves vertical differentiation of the soil parent material, in this case alluvium, in addition to the natural stratification formed as the sediments were deposited. In normal non-youthful soil profiles the gradual downward movement of the finer clay particles causes clay content to increase with depth.

There are very few locations in the batture where clay content appears to increase with depth although many locations have a recent sandy overwash over clays and silty clays, and sand strata underlying clay strata. The soil profiles in many locations also show evidence of mechanical mixing of dissimilar materials resulting from man-made disturbances. The lack of normal vertical differentiation of soil profiles can be attributed to the youthfulness of the sediments and to the absence, in some instances, of the downward percolation of water which would carry clay particles to greater depths.

Geomorphology and Archeological Potential

Introduction

The Mississippi River Alluvial Valley is an important division of the Gulf Coastal Plain. It is subdivided, on the presence of marine deposits typical of the present delta, into a deltaic plain and an alluvial valley portion. Fisk (1944) separates the two portions by a line drawn between

Franklin and Donaldsonville, Louisiana. Krinitzsky and Smith (1969) and Saucier (1974) suggest that this boundary be moved approximately 20 miles to the southeast of Fisk's line.

The alluvial valley has had a complex origin, being characterized as a valley within a valley. The present valley was formed during the Wisconsin stage of the Pleistocene glaciation. At the maximum lowering of sea level during the Wisconsin glacial advance, the ancestral Mississippi River had incised deeply into the older coastal plain sediments. This entrenched valley was partially filled with glacially derived sediments as sea level rose slowly while the Wisconsin glaciers melted.

Erosional channels in the lower portion of the alluvial valley were partially filled with a landward thinning wedge of sediments which also buried the erosional unconformities. These sediments are primarily transgressive riverline deposits and grade from coarser-sized material at the base to finer-sized material at the top. As sea level approached a stable position after the last Wisconsin advance, the sediments in the lower alluvial valley show a shift in composition and internal structure indicative of a general progradation of the shoreline resulting from the construction of the deltaic plain.

The alluvial valley upstream of the contact with the deltaic plain has had a complex history which has been discussed by Fisk (1944) and Saucier (1963, 1974) and utilized by Iroquois Research Institute (1978) to predict the location and age of cultural resources in the St. Francis River Basin.

Deltaic Plain

The deltaic plain is a composite result of several progradations of the Mississippi River. The typical deltaic complex develops by the cyclical interaction of progradation, distributary abandonment and transgression.

Studies of sediment cores, primarily their lithology, floral and faunal assemblages and radiocarbon dating, have enabled five distinct deltaic lobe complexes to be differentiated. From the oldest to youngest they are the Maringouin, Teche, St. Bernard, La Fourche, and Plaquemines-Modern Delta Complexes. Each of the five major complexes is related to a major Mississippi River course. Sixteen separate delta lobes (Frazier 1967) have been formed by the Mississippi River during the past 6,000 years. Each individual lobe within a particular complex is a result of distributary network shifts of one of the major river courses.

According to Fisk (1944) each study area of this report lies within the deltaic plain. The individual study areas are:

Lobe 3 St. Bernard	Manchac Revetment	Left Bank
Lobe 3 St. Bernard	Rich Bend Revetment	Right Bank
Lobe 3 St. Bernard	Belmont Revetment	Left Bank
Lobe 3 St. Bernard	Luling Revetment	Right Bank
Lobe 5 St. Bernard	Cutoff Revetment	Right Bank

Lobe 13 Plaquemines	Scarsdale Revetment	Left Bank
Lobe 5 St. Bernard	Poydras Revetment	Left Bank
Lobe 13 Plaquemines	Concession Levee Enlargement	Right Bank
Lobe 13 Plaquemines	Live Oak Levee Enlargement	Right Bank
Lobe 13 Plaquemines	Alliance Revetment	Right Bank
Lobe 13 Plaquemines	Point Michel Revetment	Right Bank
Lobe 13 Plaquemines	Port Sulphur Revetment	Right Bank
Lobe 13 Plaquemines	Bayou Lamoque Revetment	Left Bank
Lobe 13 Plaquemines	Tropical Bend Revetment	Right Bank

Four of the 14 items in this packet occur on sediments of the St. Bernard Deltaic Lobe 3. These items include Manchac, Rich Bend, Belmont and Luling. Two of the items, Poydras and Cutoff, occur on sediments of St. Bernard Deltaic Lobe 5. The remaining eight items are located on Lobe 13 of the Plaquemines-Modern Delta Complex. These are the Scarsdale, Concession, Live Oak, Alliance, Point Michel, Port Sulphur, Bayou Lamoque and Tropical Bend Revetment items.

The maximum formation age of Delta Lobe 3 is approximately 4700 to 4600 B.P. and that of Delta Lobe 5 is approximately 4050 to 3500 B.P. Sediments of the Plaquemines-Modern Deltaic Lobe 13 were deposited during the last 950 years.

As archeological predictive elements, the maximum ages of the various delta lobes do not provide very precise measures for dating archeological materials existing in them. The uncertainty increases if the prediction is for those archeological materials which may be found on or near the ground surface since the various lobes have been covered with additional sediment of various ages since their initial formation. These later sedimentary strata have not been dated to the extent that the major delta lobes have been.

Estimates for the maximum ages of prehistoric materials in generalized locales can be made but even these estimates apply primarily to what might exist in the substratum and not to what may be discovered during an archeological pedestrian survey.

Allowing time for the natural building of habitable levees, the following are reasonable expectations. The Plaquemines-Modern Deltaic Lobe 13 may contain 700 year old material at the upstream edge of the lobe, diminishing downstream to a zero archeological potential at Head of Passes. The St. Bernard Deltaic Lobe 3 may contain materials as old as 4,000 years and be buried 20 or more feet in the substratum. Finally, St. Bernard Deltaic Lobe 5 materials are probably older than 3,000 years and are buried 14 or more feet in the substratum.

The preceding discussion applies specifically to prehistoric occupations at the beginning of a particular depositional sequence; however, it cannot be assumed that a land surface would have been immediately suitable for human occupancy. Because of subsequent bank erosion, overbank deposition and subsidence, the original land surfaces which may have been occupied at the beginning of a depositional sequence are unlikely to still exist as present day land surfaces.

In this region both prehistoric and historic sites previously sitting on an original land surface may not exist or be easily discoverable because of active fluvial processes. The complete removal by river migration and riverbank erosion of a land area containing archeological sites is one explanation for the disappearance of cultural evidence. In such instances occupation sites have washed away.

Cultural sites may also disappear into the substratum by subsidence or additional sediment deposition subsequent to the occupation period. Depending on the particular setting, either subsidence or deposition may be sufficient alone to cause disappearance of cultural sites, although these two processes most often act in conjunction.

Archeological sites have provided useful chronological benchmarks for measuring local subsidence rates in southern Louisiana. McIntire (1958), for example, has investigated several archeological sites, primarily shell middens, which have undergone considerable subsidence in relatively short periods of time. The subsidence rate of a prehistoric mound does not, however, provide a reliable measure of the regional subsidence rate because the additional loading of the mound will cause a greater rate of local subsidence than would occur where mounds are not present (McIntire 1958:25).

The net result of the geomorphological evolution of landscape in southeastern Louisiana is to diminish the total number of cultural sites which may still be intact as well as the total number which may be discovered by any reasonable survey methodology. The same or similar processes have operated for thousands of years since the early building of the deltaic plain. Thus, it is logical to conclude that the probability that any old land surface, say 2,000 years of age, would still remain either uneroded or not covered with additional sediment, is very low.

While the regional potential for the existence of very old discoverable prehistoric sites is quite low, the potential for the existence and discovery of such sites on the battures is even lower. This low probability has two causes. First, by definition, the battures are places of vigorous fluvial activity, both now and in the past; and second, the placement of man-made levees and other direct activities in the battures during the historic period have greatly altered the natural batture environment.

A greater potential for existence of older buried prehistoric sites may exist in a few locales where natural levees may have been left undisturbed by a large setback. Some of the items in Work Packet 5 may have an incipient new natural levee or the remains of an older natural levee in the batture; however, they are difficult to identify.

The archeological potential of the battures thus depends to a greater degree on the recent fluvial processes which have affected a specific reach of the river than on the maximum potential geological age of a major delta lobe. Thus, while the regional maximum land surface ages provide a maximum theoretical expectation for existence of archeological sites, as a practical matter the recent evolution of the battures themselves provides a more realistic appraisal of archeological expectations.

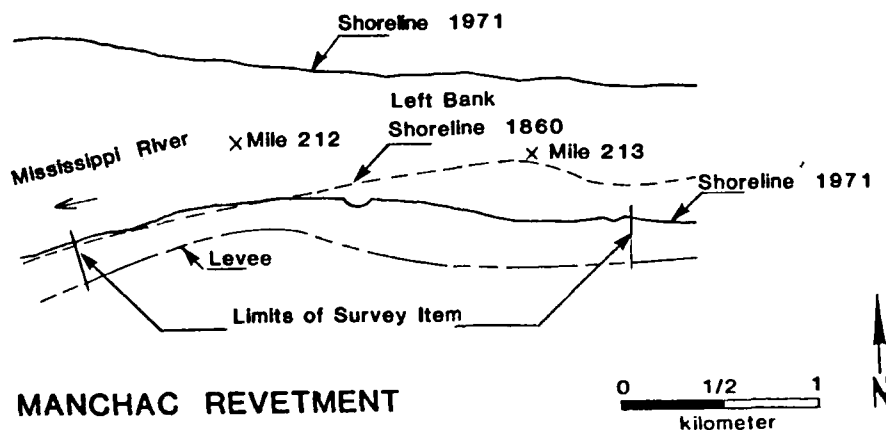
Because of the specific processes affecting battures, some of which can be documented for about the last 150 years, Iroquois Research Institute has analyzed the battures item by item, using documented changes and geomorphological theory.

In the following analyses of the geomorphological evolution of specific areas of batture, the plats of 19th century surveys by the General Land Office have been used to obtain Mississippi River shoreline positions which were transferred to current U.S.G.S. topographic maps covering each work item area. While there are undoubtedly many errors of precise measurement in the 19th century maps, some unavoidable error in the transfer process and some uncertainty in the modern maps, the township and line section benchmarks established on 19th century maps are still used on the modern maps. In the overwhelming majority of cases the changes in the shoreline have been greater than can reasonably be accounted for by mapping errors and have been in the direction (deposition or erosion) which could be predicted from fluvial process theory.

Manchac Revetment

Manchac Revetment extends 2.3 miles along the left descending bank of the river between a short right-hand and left-hand meander. A man-made levee lies between 400 and 900 feet south of the present river bank. Maximum relief on the batture is approximately 20 feet and vegetation is present. A natural levee also appears at the river's edge. Standing bodies of water may be present in low spots between these two levees. Between 1860, when a definitive survey of the area was made, and 1971 there has been a maximum of about 900 feet of shoreline erosion in the upstream portion of the item and perhaps 100 feet of deposition at the downstream limit. These changes are shown in Figure 1.

FIGURE 1

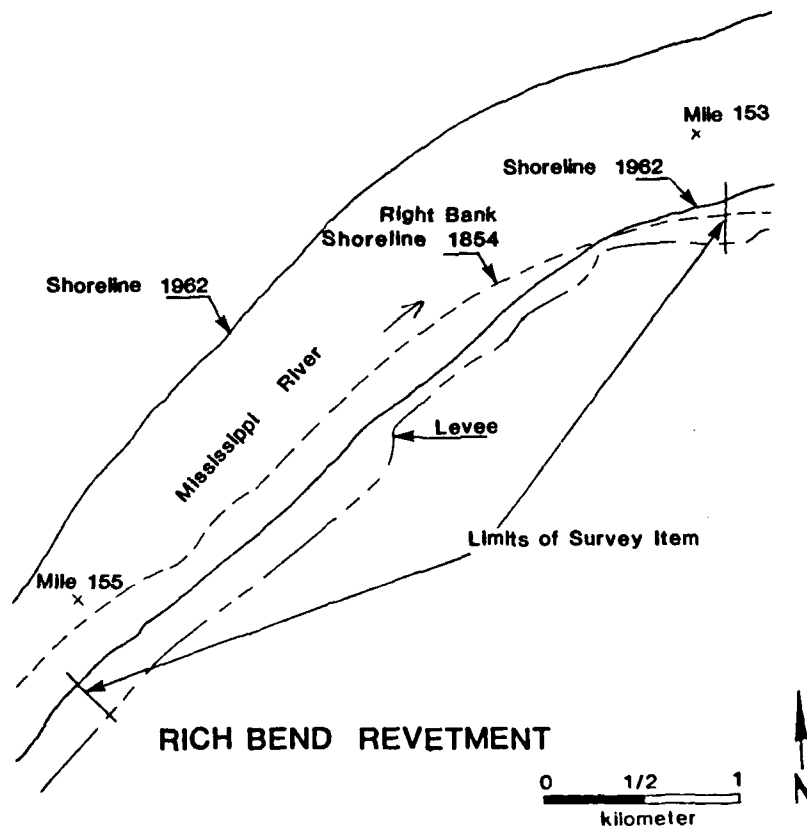


In this area the river is thus eroding into land which may have been occupied in prehistoric or historic times. Purple shading on the most recent topographic map reveals changes between 1963 and 1971. During this nine year interval, the entire 2.3 mile-long segment was eroded up to a maximum of 200 feet. While such areas of active bank erosion have a fair potential of containing subsurficial cultural materials in situ, there is also a high probability that they will be washed away as they are being exposed in the cutbank.

Rich Bend Revetment

Rich Bend Revetment extends for 2.9 miles along the right descending bank of the river between a sharp left-hand and a moderately sharp right-hand meander. A man-made levee is set back from the shoreline at a distance of 600 to 800 feet at the upper end and 100 to 400 feet at the downstream end. Relief varies between 10 and 15 feet. Between 1854 and 1962 the upstream end of the batture has been eroded a maximum of about 700 feet; a small portion at the downstream limit has received deposition amounting to as much as 300 feet. These changes are shown in Figure 2.

FIGURE 2



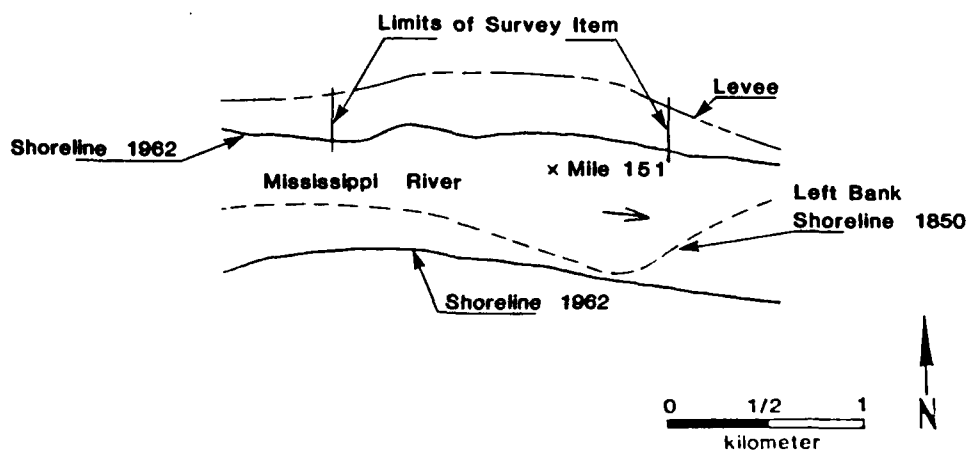
Since there is an old man-made levee included in the batture of this item, those portions of the batture between the old and new levees have a higher potential for containing archeological sites, at least sites dating from the early historic period when portions of the present batture may have been farmed or used in other ways.

Belmont Revetment

Belmont Revetment extends for one mile along the left descending bank of the Mississippi River. It lies on the outside bend of a moderately sharp right-hand meander and is just downstream of the Rich Bend Revetment. Relief is between 10 and 15 feet. A man-made levee lies between 600 and 900 feet to the north of the present river bank. The batture contains water-filled borrow pits and what appears on the 1962 topographic map to be remnants of a former man-made levee.

Figure 3 illustrates the great amount of shoreline erosion occurring at this location between 1850 and 1962, a maximum of about 2,000 feet. The amount of erosion over the past 150 years suggests a possibility that it could have destroyed prehistoric or early historic sites in this area or be in the process of exposing them along erosional cutbacks. The current batture appears to have been extensively disturbed by levee building, as evidenced by the borrow pits and old levee remnants, a factor arguing against the existence or discovery of in situ cultural remains.

FIGURE 3
BELMONT REVETMENT

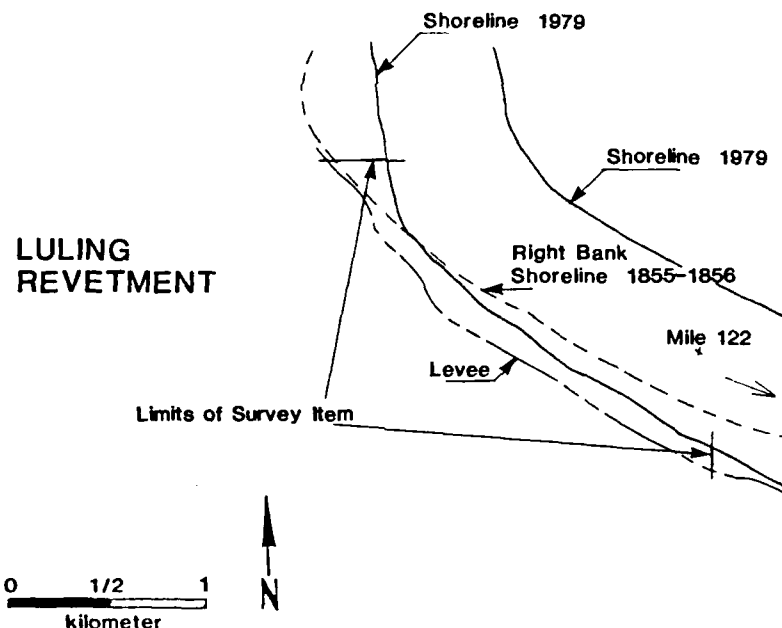


Luling Revetment

Luling Revetment extends for over a mile along the right descending bank of the river. It lies on the outer bank of a moderately sharp left-hand meander. A man-made levee lies between 900 feet upstream and 300 feet downstream to the southwest of the present river bank. Changes in

the position of the shoreline between 1855-56 and 1979 are shown in Figure 4. This illustration indicates that the shoreline here is transitional between deposition at the upstream end and erosion at the downstream end. Photo revisions, in both 1972 and 1979 of the 1967 map indicate a small amount of deposition at the upstream end for that particular period, a fact consistent with the long-term trend.

FIGURE 4



Since the 1855-1856 map was made, erosion at the downstream end of the item has removed about 600 feet and deposition along the upstream end has added about 800 feet.

The area deposited since 1856 would, of course, have no potential of containing in situ prehistoric cultural materials and only a low potential for historic period materials. By contrast, the eroding portion of the batture has a fair potential for containing historic period cultural materials. Because of the evidence of active river migration, the potential for prehistoric cultural materials near the surface in the area of erosion is very low although there is a potential for the existence of prehistoric materials in the subsurface being exposed in erosional cutbanks.

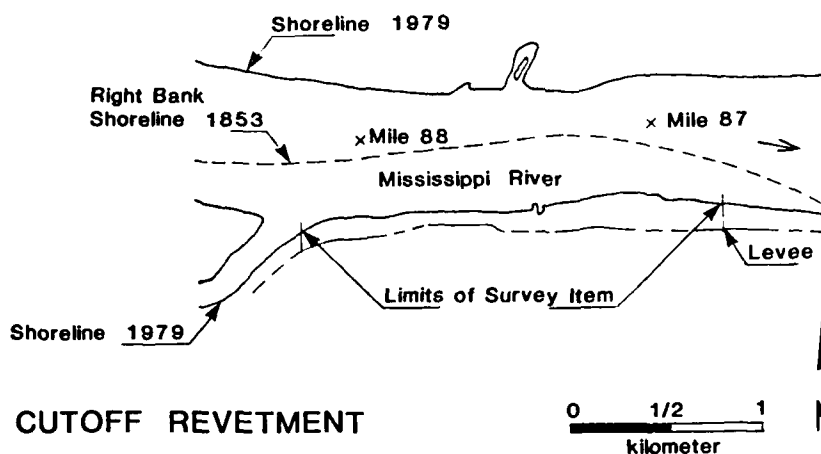
Cutoff Revetment

Cutoff Revetment lies along a straight stretch of the right descending bank of the Mississippi River between a left and right-hand

meander bend. Along this entire section of the river a man-made levee is located between approximately 100 and 550 feet south of the present river bank. Relief of the batture is a maximum of 15 feet. The majority of the batture is covered with vegetation.

The comparison of the shorelines of 1853 and 1979 shown in Figure 5 indicates that erosion was the predominant process occurring over that period, ranging from approximately 700 to 1,200 feet. This is the normal expectation for the configuration of the river at this locale. Without man's interference the river would be expected to eventually cut through the meander somewhere near this item.

FIGURE 5



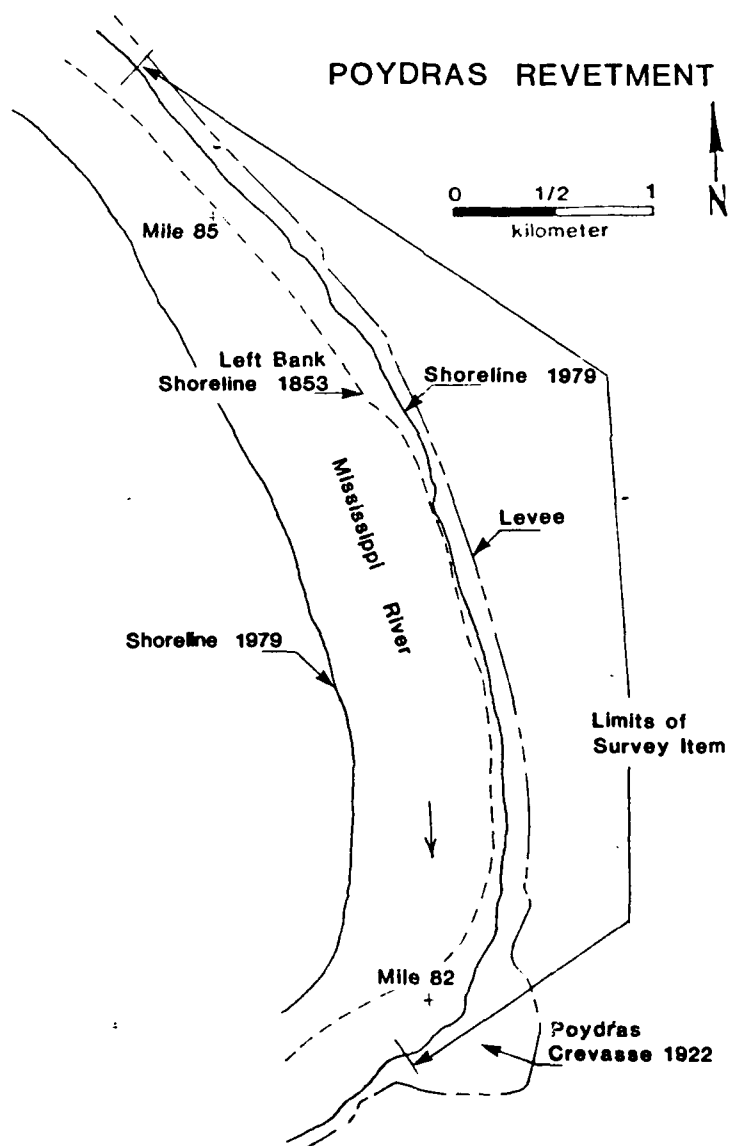
The potential for existence of historic period cultural materials in the batture at this location is low because of erosion, deposition, and previous levee setbacks. These processes would have also severely disturbed any prehistoric materials within several feet of the original land surface.

Poydras Revetment

Poydras Revetment lies along the left descending bank of the Mississippi River beginning approximately 1.2 miles downstream from the lower limit of the Cutoff Revetment. This study area extends approximately 3.8 miles along the left bank of a major right-hand meander bend of the river. A man-made levee is situated between 100 and 300 feet east of the present river bank. At the downstream end, the levee is up to 1,500 feet from the present river bank. The batture has a relief of less than 10 feet at the upstream end and less than 15 feet at the downstream end.

The permanent status of this batture is very questionable since the outside left bank of a rather short or small radius meander bend should be subjected to rather severe erosional forces, especially during periods of high water. In the central portion of the project area the position of the shorelines has apparently remained stable since 1830. The remaining shoreline has been eroded from 750 feet to 900 feet downstream. These shoreline changes are illustrated in Figure 6.

FIGURE 6



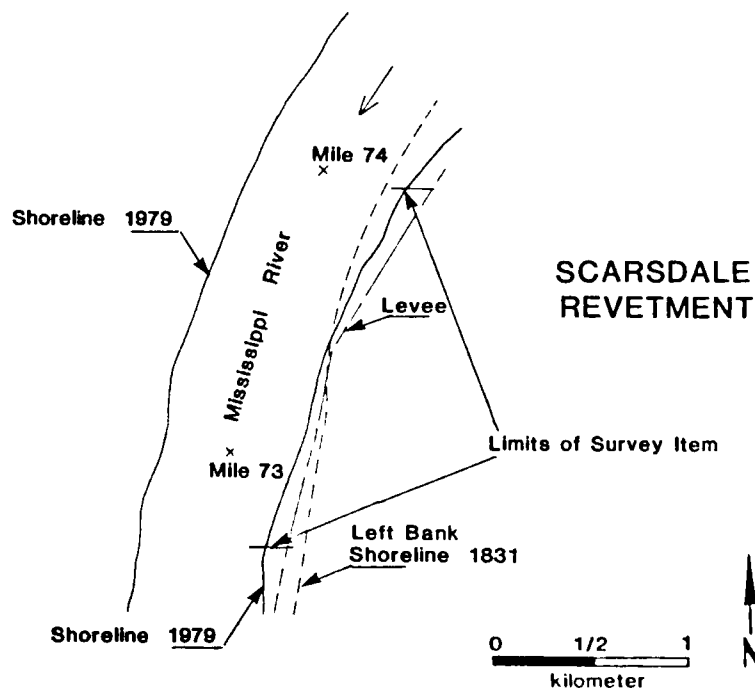
The great degree of erosion in this area during the historic period would indicate that archeological sites present in the substratum and surface are being rapidly exposed and washed away.

Scarsdale Revetment

Scarsdale Revetment lies along the left descending bank of the Mississippi River south of English Turn Bend. The revetment covers a horizontal distance of 1.3 miles on the inside bend of a minor, or very large radius, left-hand meander of the river. A man-made levee lies approximately 50 to 400 feet east of the current river bank. Maximum relief on the wooded batture is 10 feet.

Between 1831 and 1979 the upstream portion of this item has been eroded a maximum of about 375 feet while the downstream portion of the shoreline shifted westward as much as 800 feet because of deposition downstream from the axis of the bend. Losses and gains of land surfaces for that period are shown in Figure 7. Since the upstream portion of the batture is still being eroded and there is good evidence from the position of the river shoreline in 1831 that the uneroded portion may have been a habitable levee during that general time period, there is a moderate potential for existence of historic period cultural materials in this

FIGURE 7



portion of the batture. These materials could, however, be covered with as much as about 10 feet of sediment. The potential for the existence of prehistoric or historic in situ materials in the newly deposited area of batture downstream is extremely low.

According to Saucier's (1974: Figure 1) analysis of the Quaternary Geology of the Lower Mississippi Valley, this item lies in a somewhat unique geological setting. The boundary between the St. Bernard Delta Lobe and the younger Plaquemines-Modern Delta Lobe occurs within the Scarsdale right-of-way. The item also lies in a narrow portion of the present meander belt of the Mississippi River. Since the Plaquemines-Modern Delta was deposited from about 1,000 years ago to the present and it would have taken some time after the delta lobe was formed for formation of the meander belt, there is an implication that the meander belt at Scarsdale could be very young, perhaps having formed over the last 300 to 500 years.

Scardale's location also implies that upstream from this vicinity both the main mass of the delta, and the meander belt that developed within it, may be older than areas downstream. Most of the more recent point bar deposits downstream would thus have a near zero probability of containing in situ prehistoric cultural materials.

Concession Levee Enlargement

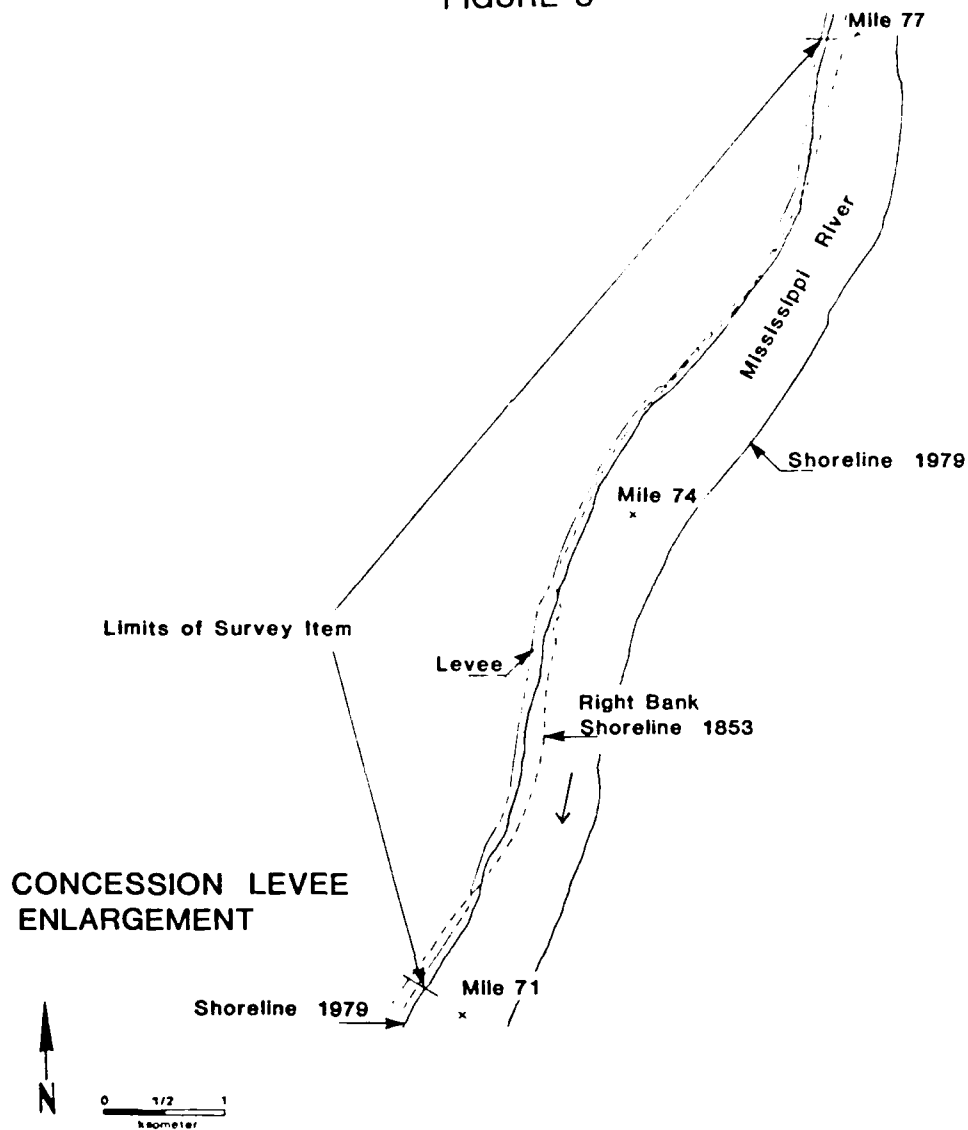
Concession Levee Enlargement lies on the right descending bank of the Mississippi River south of English Turn Bend. This enlargement lies opposite the Scarsdale Revetment and adjoins Live Oak Levee Enlargement at its downstream end. The levee enlargement area extends downstream for five miles and consists of three successive right-hand, left-hand, right-hand large radius meanders. The shoreline is paralleled 100 to 400 feet to the west of the present river bank by a man-made levee. Relief on the predominantly wooded batture is approximately 10 feet.

Minimum distances between the levee and present river bank occur at the axis of the right-hand bend at Belle Chasse and again at the axis of the right-hand bend opposite Promised Land. This is a similar condition to that found at the axis of the left-hand meander bend on the Scarsdale Revetment area across the river. This long shoreline segment without sharp bends has areas where either a net amount of erosion or deposition occurred between 1853 and 1979, as shown by Figure 8. The shoreline in the vicinity of Belle Chasse has apparently remained in nearly the same position for this time period. Erosion in the upstream portion has amounted to as much as 650 feet and deposition in the downstream portion to a maximum of 500 feet. Because of lack of recent changes in shorelines position, the potential for existence of in situ cultural materials is greatest in the vicinity of Belle Chasse.

Live Oak Levee Enlargement

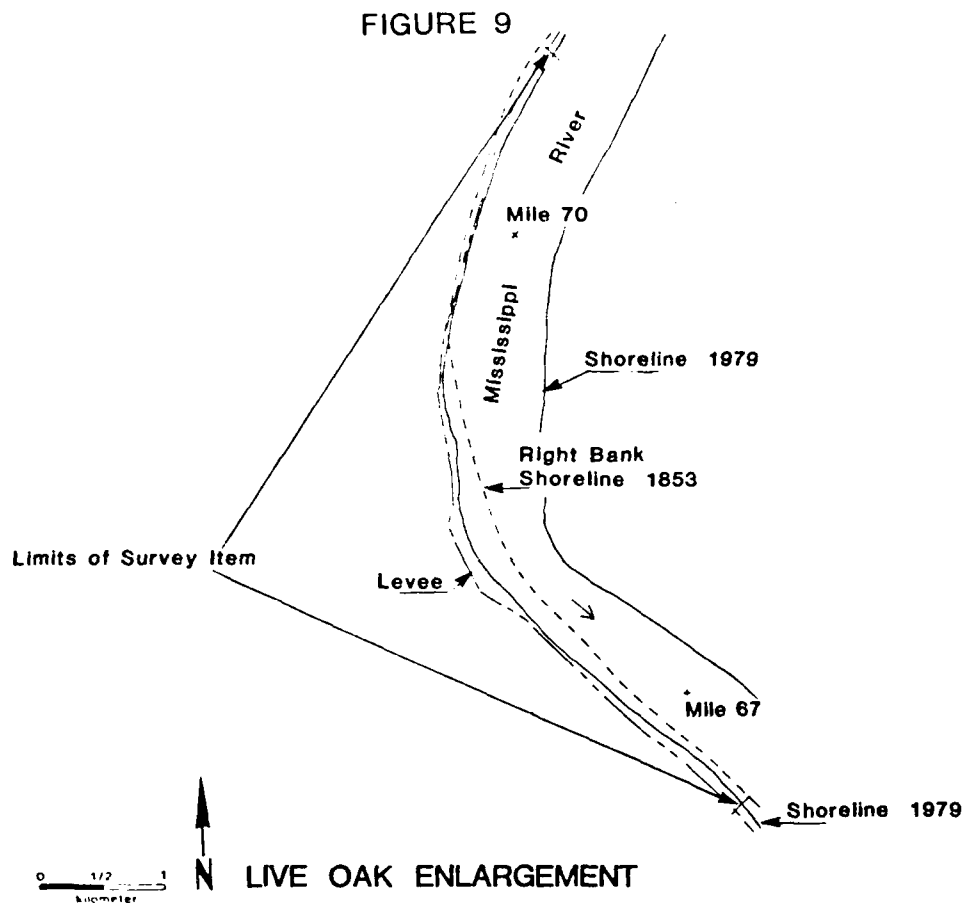
Live Oak Levee Enlargement extends approximately 6.5 miles along the right descending bank of the Mississippi River just south of the Concession Levee Enlargement area. It overlaps at the downstream end with the Alliance Revetment. Live Oak is located on the right bank of a major

FIGURE 8



left-hand meander bend. The width of the batture ranges between 100 and 500 feet and its relief is less than 10 feet. Maximum width of the batture occurs in the vicinity of the axis of the bend at Live Oak, probably because the levee was set back further in that area when it was constructed. Most of the area has undergone significant bank erosion and destruction of possible sites during high water stages when velocities are at or near maximum. The channel in the recent historic past has migrated towards the west along the downstream end, thus, suggesting a minor likelihood for locating sites in the upstream portion where slight deposition has occurred.

The shifts in shoreline position between 1853 and 1972 are shown in Figure 9. Deposition in this period has amounted to as much as 600 feet at the upstream end. Erosion at the downstream end of approximately 800 feet has occurred.



Alliance Revetment

Alliance Revetment lies on the right descending bank and overlaps with the Concession Levee Enlargement at its upstream end. It extends over seven miles, along a fairly straight reach of the river where there are four minor or large radius meander bends which are respectively, right-hand, left-hand, right-hand, and left-hand proceeding downstream.

A man-made levee lies between 25 and 500 feet westward of the present river bank. Minimum widths of the batture occur at the axis of the right-hand bend between miles 65 and 66 and again at the axis of the right-hand bend between miles 61 and 62. The minimum width at the upstream end probably results from erosion by the river as it leaves the smaller radius or sharper bend opposite Live Oak.

FIGURE 10

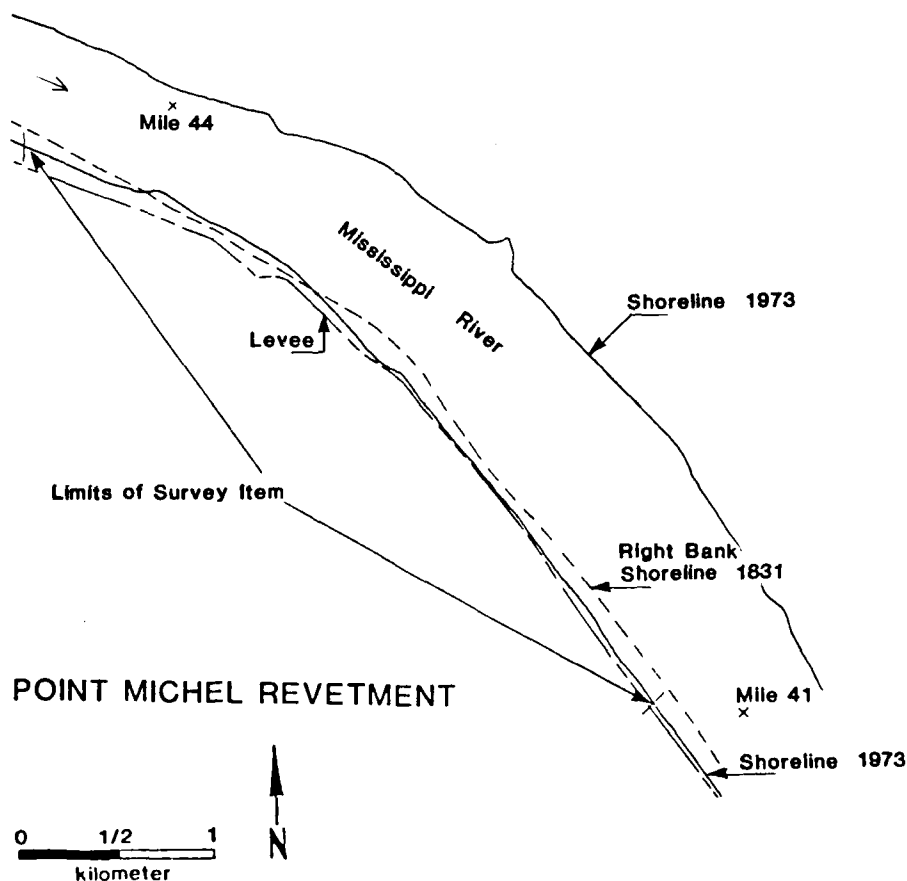


150 years and some areas of older land which are being eroded. Additional deposition along the downstream portion south of Alliance has amounted to as much as about 700 feet since 1873. Some, but not all, of the areas where the shoreline is eroding are also areas where the batture is accumulating additional sediments during overbank flooding. In such areas of shoreline erosion, buried cultural materials are being exposed and subsequently washed away.

Point Michel Revetment

Point Michel Revetment extends 3.3 miles along the right descending bank of a large radius or gentle right-hand meander bend of the Mississippi River. A man-made levee extends along the river with a setback varying between 50 and 400 feet. The migration of the active channel in historic times has been towards the west. Thus, the downstream area should be undergoing erosion, especially during times of flood, and the upper portion, especially at the axis of the meander, would exhibit deposition. Figure 11 shows that between 1831 and 1973 up to 400 feet of

FIGURE 11



bank erosion has occurred at the downstream end, and up to 200 feet of deposition has occurred near the axis. Any historic sites may have been buried beneath more recent overbank deposits, or are being eroded as the river migrates. In late prehistoric times the river channel was some distance away as another distributary was in use, therefore, potential for prehistoric sites in the batture is extremely low since the land mass is relatively new.

Port Sulphur Revetment

Port Sulphur Revetment is divided into two parts, both lying on the right descending bank just south of the Point Michel Revetment. The northern section is 2.3 miles long and is on the right bank of a gentle left-hand meander. The southern section is also 2.3 miles long, but it lies on the inside of a moderately sharp right-hand meander. The batture has less than five feet of relief and is partially covered with vegetation. The width of the batture in the upstream portion is less than 100 feet, while it ranges between 100 and 500 feet in the downstream section.

Erosion of 300 to 500 feet has occurred along the upstream section of Port Sulphur between 1831 and 1973. Between 1860 and 1973 the downstream section has been eroded as much as 600 feet at the upstream end and received deposition of about 1,500 feet at the downstream end.

This section of the river appears to be among the most actively meandering areas downstream of English Turn Bend. The significant changes of shorelines position for the two segments are shown in Figures 12 and 13.

The portions of the batture formed by sediments laid down since the middle of the 19th century have no potential for in situ prehistoric materials and only a chance of containing in situ historic cultural sites. The youthfulness of all the sediments, both surface and subsurface, in this area makes the potential for both prehistoric and historic in situ materials low in the areas where bank erosion has been occurring.

Bayou Lamoque Revetment

Bayou Lamoque Revetment lies on the left descending bank of the Mississippi River. It extends 2.3 miles along the outer bank of a fairly sharp right-hand meander. The upstream portion lies opposite the downstream portion of the Port Sulphur Revetment. A man-made levee exists at the downstream end of the revetment. Maximum relief in this area is less than five feet. Between 1854 and 1973 a maximum of about 2,200 feet of erosion occurred at the axis of the meander as shown on Figure 14. The entire area is undergoing active erosion and also suffers from subsidence and periodic overbank flooding. Any historic or prehistoric sites which may have existed in this area are likely to have been exposed and destroyed by erosion or buried by sediment.

FIGURE 12

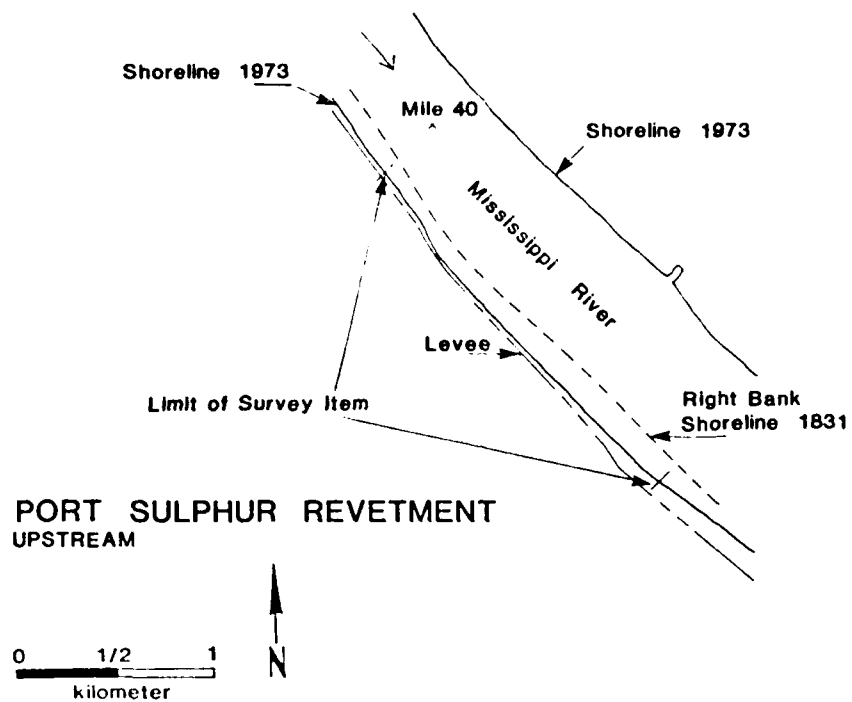


FIGURE 13

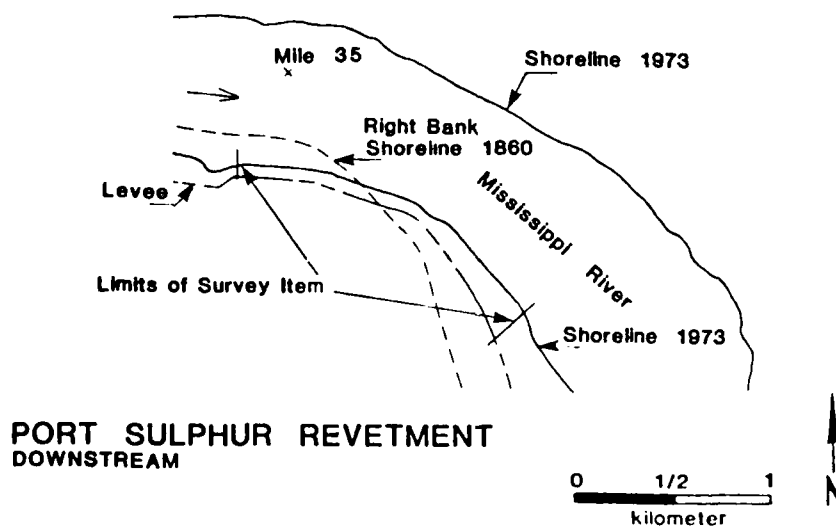
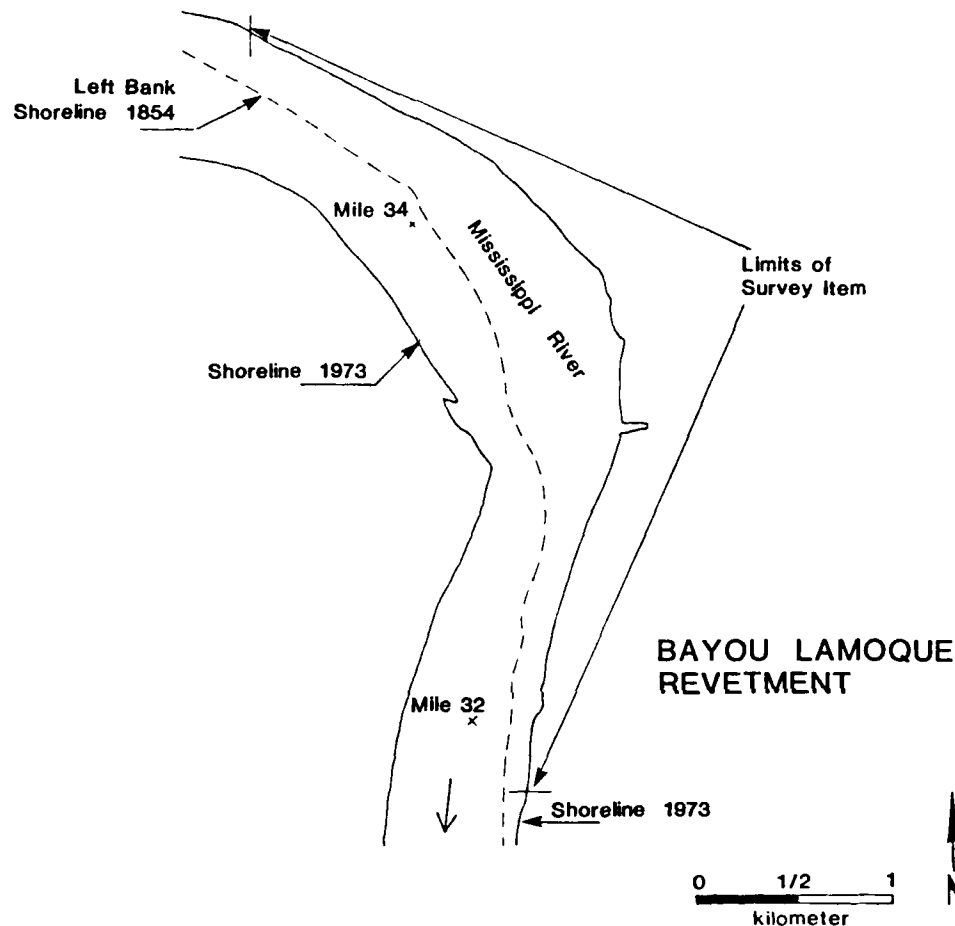


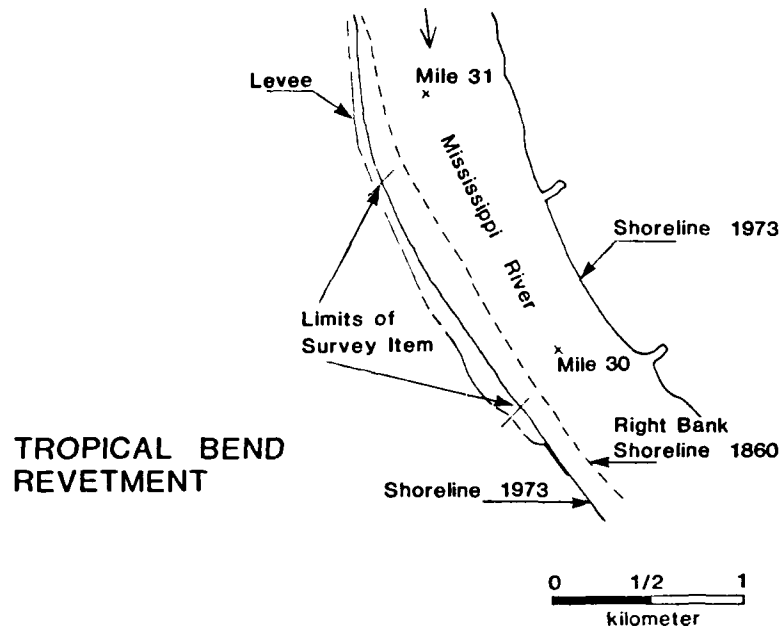
FIGURE 14



Tropical Bend Revetment

Tropical Bend Revetment extends for 0.9 miles along the right descending bank of the river. It is located just downstream from the Bayou Lamoque Revetment and lies on the approach to a gentle left-hand meander. The area between the man-made levee and the present river channel, as shown on the 1973 topographic map, ranges between 100 and 400 feet. The batture is covered with vegetation except for a large water-filled borrow pit at the downstream end. Erosion of the shoreline for the period 1860 to 1973, shown in Figure 15, has amounted to 450 to 550 feet. In this area where subsidence, accompanied by deposition and river migration, is a significant factor in the environment, any in situ cultural remains in the batture are likely to have been either exposed and destroyed by bank erosion or buried several feet in the substratum.

FIGURE 15



Prehistoric Environments

The Deltaic Plain of the Mississippi River in the area included in this study is probably the youngest land mass of comparable size in North America. Because of the youthfulness of the land it has evolved within a time period having essentially the same climatic characteristics as exist today. Although the great Pleistocene glaciations are directly responsible for the physical existence and character of the land, it has not been influenced by cyclical glacial period climatic changes nor has it supported a flora and fauna significantly different than that which existed at the beginning of the historic period.

The geological and geomorphological evolution and characteristics of the environment have been discussed in the previous section. The same processes which are still shaping the land began about 5,000 years ago subsequent to the last major glaciation when sea level reached its approximate present level (Saucier 1974:13). During this entire time period the Mississippi river has completed several repetitive and predictable cycles of delta building, with each successive land surface supporting a similar flora and fauna. The succession of habitable land surfaces was, without a doubt, as much a significant aspect of the environment for prehistoric peoples as it is for today's habitants.

In as far as extrapolations which can be made from the modern environment to the prehistoric, the best starting point is the early part of the historic period. This is because of the great changes which have

been made in the natural environment by man in the historic period. Examples of changes are widespread deforestation, large scale intensive agriculture, levee and canal building and industrial activities. Few, if any, natural undisturbed levees exist along the Mississippi River from which to extrapolate prehistoric levee conditions.

There are, however, quite good records from the earliest part of the historic period to indicate the relative abundance and importance of different plant and animal species in local prehistoric economies. A number of authors have provided extensive accounts of species known to have been utilized by the aboriginal peoples during that period (McIntire 1958:31-39; Davis et al. 1979:16-22). The latter reference concentrates especially on the aquatic and marsh flora and fauna.

With the exception of large animals such as wolf, cougar and bison which have become rare or extinct in southeastern Louisiana, most prehistoric flora and fauna species are still present to some degree, but in much fewer numbers of lower densities and only in some of their original habitats. A few exotic animals such as the nutria and European house sparrow have been added to the indigenous fauna and many exotic plant species have been introduced both accidentally and purposefully.

Because of the relatively young age of land surfaces and the relative stability of the climate over the likely period of potential human occupation, one can project that a given spot would have had one of several predictable past environments. These environments have been defined by Wiseman et al. (1979:4-15) according to definable biotic zones which exist in the modern environment. These zones are Natural Levee, Freshwater Swamp, Freshwater Marsh, Brackish Marsh and Saline Marsh. These authors did not specifically described the biota of the natural or man-made batture but did described two human created zones resulting from dredging activities.

Two of these biotic zones, the natural levee and the freshwater swamp, supported trees with an associated flora and fauna. The natural levee zone contained the greatest diversity of resources such as acorns from live oak (Quercus virginiana) and willow oak (Quercus phellos), nuts from bitter pecan (Carya aquatica) and pecan (Carya illinoensis), fruits from persimmon (Diospyros virginiana) and mulberry (Morus rubra) and edible roots from greenbriar (Smilax sp) and wild potato (Ipomea pandurata). Mammals on the natural levee included deer, opossum, raccoon, rabbit and squirrels.

In the freshwater swamp the principal trees were cypress (Taxodium distichum), tupelo gum (Nyssa aquatica) and maple (Acer rubrum Var. drummondii). The principal animals were amphibians and aquatic life including water snakes and alligators. Water fowl were abundant here and in the brackish marsh.

The freshwater marsh usually had a high proportion of cattail (Typha latifolia) mixed with grasses such as common reed (Phragmites communis) and water millet (Zizaniopsis miliacea). Freshwater and brackish marshes were habitats for a large variety of turtles, frogs, reptiles, migratory

waterfowl, and invertebrates such as crayfish and clams. The brackish marsh had many plant species but was dominated by couch grass (Spartina patens) and black rush (Juncus roemerianus). Fauna in the brackish as well as freshwater marsh included muskrat (Onadatia zibethicus), otter (Lutra canadensis) and several species of fish, clams and migratory waterfowl. Of great importance in both the past and present local economics were the shellfish, primarily the brackish water clam (Rangia cuneata) and oyster (Crassostrea virginica; Wiseman et al. 1979:2-15).

For any given portion of a present day batture along the Mississippi River it is not possible to determine without detailed and elaborate investigations the previous environments which may have attained at a given location at a known time in the past. In the many cases where point bars have been deposited recently to great depths, it is likely that no amount of investigation could establish more than a theoretical model of what prehistoric environments may have occurred at those locations. Such effort would not be warranted in any case since recent point bar deposits along this area of the Mississippi have no potential for containing in situ prehistoric materials.

For those areas of batture which cannot be defined as recent point bars from actual historic records, we may make somewhat more reasoned judgments regarding their most recent environmental setting, that is their last environment prior to becoming a batture. Since the present, largely man-made battures are quite variable, these areas collectively do not fit into any single previously defined biotic zone or other natural environmental strata.

CHAPTER III

PREHISTORIC AND HISTORIC BACKGROUND

Methodology

The background research had four major objectives: (1) to determine the prehistoric and historic context of the study areas; (2) to locate any prehistoric and historic properties prior to the pedestrian archeological survey, including those that may already have been listed on the National Register of Historic Places or on state or local registers; (3) to determine the historic associations of any properties found during the pedestrian archeological survey; and (4) to delineate the geomorphological changes that have occurred along the study items and to evaluate their effect upon cultural resources. To meet these objectives, Iroquois Research Institute archeologists, historians, and geomorphologists surveyed a wide assortment of documentary evidence from diverse repositories. These are listed in Table 2.

Prehistoric and archeological background material was obtained from current cultural resources reports, literature on Louisiana prehistory, and from the site records at the Louisiana Division of Archaeology and Historic Preservation in Baton Rouge. Libraries in Louisiana and Washington, D.C. were also utilized.

To determine the historical importance of the items, standard Louisiana histories were first examined to find evidence of significant events or properties occurring in or adjacent to the survey items. The history of particular landholdings along the river was explored through primary and secondary documentation.

Various parish records housed in courthouses and manuscript collections were inspected. Libraries in both Louisiana and Washington, D.C., containing primary and secondary materials, were surveyed by Institute historians. Personal interviews were also conducted with historians, archeologists, engineers and local residents. They often shared firsthand accounts and unpublished reports and graphics.

No attempt was made to write a definitive history of Louisiana or to exhaust the available documentation for any one survey item. The complexity of the historical situation would have made such a task impractical. After the Civil War, for example, many of the major large plantations were subdivided. Subsequent changes in ownership and size of the properties occurred so often that the research required to trace all the landholdings contiguous to the 14 survey items would have been beyond the scope of this study. Instead, the major plantations and other landholding types were given priority.

Some plantations were investigated more extensively than others in the item-by-item historical survey. Differences in emphasis are due to

TABLE 2

ARCHIVES, LIBRARIES AND COLLECTIONS CONSULTED

LOUISIANA

Baton Rouge

- Louisiana State Library
- Louisiana State Office of Archaeology and
Historic Preservation
- Louisiana State University Library, Department
of Archives, Louisiana Room

Chalmette

- St. Bernard Parish Courthouse
- St. Bernard Parish Library

Lutcher

- St. James Parish Library

Hahnville

- St. Charles Parish Courthouse
- St. Charles Parish Library

New Orleans

- Historic New Orleans Collection, Manuscripts Division
- Howard Tilton Memorial Library, Government Documents
Division, Louisiana Division and Special Collections
Division, Tulane University
- Louisiana State Museum
- Loyola University, Spanish Documents Project
- New Orleans Notarial Archives
- New Orleans Public Library, Louisiana Division
- Orleans Parish Conveyance Office
- U.S. Army Corps of Engineers, District Library
- University of New Orleans Library, Louisiana Room

Pointe a la Hache

- Plaquemines Parish Courthouse

WASHINGTON DC METROPOLITAN AREA

Alexandria, Virginia

- Bureau of Land Management

Washington

- Library of Congress, Geography and Maps, Division,
Manuscripts Division, Card Catalog, French Colonial
Microfilm Index
- National Archives

Reston, Virginia

- National Cartographic Information Center
- U.S. Geological Survey Library

the fact that important historic properties, requiring additional in-depth research, were discovered in some items but not in others. Much of the historic research relating specifically to items discovered during the archeological survey is presented in Chapter 6.

The geomorphological effort, much of which has been described in the preceding chapter, involved extensive cartographic analysis at the Library of Congress Map Division and at the Bureau of Land Management Cadastral Survey Office in Alexandria, Virginia. Surveyors notes, plat maps, and other information pertinent to riverbank changes were examined at the latter office.

Previous Archeological Work

The focus of archeological work in southern Louisiana has undergone several changes since the late 19th century. Some of these changes were reflective of archeology's development as a discipline; others were inspired by environmental conditions unique to Louisiana and the lower Mississippi River Valley.

Late 19th and early 20th century archeological work in southern Louisiana generally consisted of the description and excavation of large sites such as mounds and middens. Amateur archeologists were not interested in incorporating their local work into a regional framework (Ford 1951). This emphasis changed with the advent of archeological projects sponsored by the Works Projects Administration, formerly Works Progress Administration, in 1935. Archeologists in the Southeast collected and exchanged data across state boundaries, eventually resulting in the first syntheses of the prehistory of southeastern and eastern North America (Lyon 1976). Correlations were drawn between cultural material from excavations in Louisiana and material from sites in the eastern United States. For example, at the Greenhouse site, Ford and his staff were able to tentatively relate Marksville materials from this site to Ohio Hopewell materials (Ford 1951). Projects sponsored by the Works Progress Administration also afforded archeologists the opportunity to define local cultural complexes in Louisiana, such as the Marksville-Troyville-Coles Creek-Plaquemine continuum, by funding numerous excavations. The results of such federally sponsored work have formed the basis for the overall cultural chronology of the entire lower Mississippi River Valley.

Toward the end of the Works Projects Administration, archeology in Louisiana took a new heading. The unique nature of the Mississippi River delta enabled cultural geographers and geomorphologists of the late 1930s through 1950s to adopt an environmental deterministic or cultural ecological approach to prehistoric site location analysis (Niffen 1936, 1938; McIntire 1954, 1958). The relationship of archeological site data to the geomorphological processes of the delta has been so close that archeological survey data have been used to corroborate geological dating of deltaic complexes (McIntire 1954).

Since the early 1970s, the focus of archeological work again shifted to reflect changing public attitudes concerning the environment and

historic preservation. The Archeological and Historic Preservation Act of 1974 made the Secretary of the Interior responsible for coordinating and administering a nationwide archeological preservation program and authorized Federal construction agencies to use program funds for archeological studies (Comptroller General of the United States 1981). The availability of this funding has allowed archeologists in Louisiana and other states to develop systematic survey methodologies tailored to the particular needs of the contracting agency. It is within this framework that numerous surveys have been implemented along the batture of the lower Mississippi River.

Although systematic batture surveys have been few in number, several have been conducted along the Mississippi River in the vicinity of the study area. Several of these studies have produced methodological, theoretical and substantive information relevant to this report.

Dr. J. Richard Shenkel of the University of New Orleans has conducted a number of floodwall, levee enlargement, and revetment surveys for the U.S. Army Corps of Engineers, New Orleans District (Shenkel 1976a, 1976b, 1976c, 1977a, 1977b, 1977c, 1977d, 1977e; Shenkel et al. 1976). The survey area in most of these studies involved the batture along the edge of the Mississippi River.

Cultural resources described in these investigations included a wash of 19th and early 20th century artifacts unearthed in a trench for floodwall construction in New Orleans (Shenkel 1976b), two structures apparently associated with Fort St. Leon and a cypress plank wall at English Turn in Plaquemines Parish (Shenkel 1976c). Most of the surveys conducted by Shenkel (1976a, 1977a, 1977b, 1977c, 1977d, 1977e; Shenkel et al. 1976) did not result in the discovery of cultural remains. Unfortunately, none of these survey reports contained sufficient discussion of survey conditions, methodology, or the criteria used to define archeological sites. Consequently, the predictive value of the negative results of these surveys is reduced since the information presented is insufficient to allow other archeologists to establish valid comparisons.

In 1978, three cultural resources surveys were conducted for levee enlargements and revetments in Plaquemines Parish (Rader 1978a, 1978b, 1978c). No cultural resources were reported found during these surveys. Like the Shenkel surveys, the absence of explicitly stated site definition criteria makes it difficult to compare the negative results of these investigations with other archeological work in the area. These surveys included the batture within the study area.

A cultural resources survey was conducted by Tulane University along both sides of the Mississippi River levee in south Plaquemines Parish (Davis et al. 1979). This survey area included the batture and overlapped with the Bayou Lamoque survey item of this report. Davis provided a good description of the environment and survey conditions as well as a fairly complete explanation of field methodology. Substantial historic remains were discovered including a fort, cemeteries, settlements and structural remains. No prehistoric cultural material was found. Much of the study

area was unique in that it had been abandoned in the 1920s (Davis, personal communication). Davis et al. (1979) noted and described the difficulties in defining and delimiting archeological sites from the occasionally wide-spread artifact and debris scatters that characterize the batture. Twelve site locations were described that consisted of artifact scatters. Some of the artifacts, including brick, glass, ceramics and metal items, dated to the 18th, 19th and 20th centuries and may be indicative of house middens (Davis et al. 1979). Subsurface testing often produced no material.

In 1979, Coastal Environments, Inc. conducted a cultural resources survey of the Mississippi River Gulf Outlet in Orleans and St. Bernard Parishes (Wiseman et al. 1979). This survey resulted in the discovery of three prehistoric shell middens, five prehistoric spot finds, a historic foundation and a railroad bed. The report presented a detailed reconstruction of the paleogeography of the study area. The absence of site definition criteria prevented a determination of the types of historic cultural resources that may have been noted in the survey but were not reported as sites.

Iroquois Research Institute conducted two surveys on the batture of the Mississippi River above and below New Orleans (Iroquois Research Institute 1980b, 1980c). Five historic sites were recorded during the survey above New Orleans (Iroquois Research Institute 1980b). These sites consisted of a wooden retaining wall, a scatter of modern construction debris, a scatter of glass, ceramic, metal and other historic material, a concrete slab foundation with an associated scatter of glass, ceramic, metal and other artifacts, and a ship's hull. All these sites dated to the 20th century (Iroquois Research Institute 1980b). The survey below New Orleans (Iroquois Research Institute 1980c) resulted in the recording of two historic sites consisting of the remains of a possible dock structure and a standing house with associated brick scatters. A superficial analysis of the architectural elements of the house revealed that it had probably been built between 1830 and 1840 (Iroquois Research Institute 1980c). Both survey reports (Iroquois Research Institute 1980b, 1980c) contained details of survey conditions and methodology as well as an explicit statement of site definition criteria.

Previously Recorded Sites

Archeological sites representing virtually all phases of human occupation have been recorded in southern Louisiana. The majority of prehistoric sites have been identified as Sedentary period occupations (Muller 1978). The area within a 1.5 miles radius of each survey item was examined on topographic maps at the office of the Division of Archaeology and Historic Preservation in Baton Rouge. Four prehistoric and 13 historic sites had been recorded. Of these 17 sites, two prehistoric and five historic sites were located on the batture. These 17 sites are summarized in Table 3. The locations of two of these sites fell within the limits of two of the survey items, Manchac and Bayou Lamoque.

A prehistoric site, 16IV127, was recorded by J. Richard Shenkel during a low water period in October, 1976. The location of this site is

TABLE 3
PREVIOUSLY RECORDED SITES WITHIN 1.5 MILES
OF THE STUDY AREAS

Site No.	Site Name	Cultural Affiliation	Descending Riverbank	Relationship to Survey Items
16TV126	Unnamed	Prehistoric	Left	Above Manchac
16TV127	Unnamed	Prehistoric	Left	Within Manchac
16PB91	Medora	Prehistoric	Right	Opposite Manchac
16SC18*	Destrehan Plantation	Historic	Left	Below Luling
16SC19*	Homeplace Plantation	Historic	Right	Above Luling
16SC20	Ellington Manor	Historic	Right	Below Luling
16SC21	Dr. Lehmann House	Historic	Right	Above Luling
16SC22	Fashion Plantation	Historic	Right	Above Luling
16SC23	Little Red Church	Historic	Left	Opposite Luling
16SC24	Ormond Plantation	Historic	Left	Opposite Luling
16PL27*	Fort de la Boulaye	Historic	Left	Opposite Alliance
16PL64	Point Pleasant Camp	Historic	Left	Below Bayou Lamoque; opposite Tropical Bend
16PL67	Jeanfreau	Historic	Left	Opposite and between Port Sulphur items
16PL71	Empire Oil Field I	Historic	Left	Below Bayou Lamoque; opposite Tropical Bend
16PL77	Barrow and Slatter	Historic	Left	Above Bayou Lamoque
16PL78	Harris Bayou	Historic	Left	Within Bayou Lamoque
16PL81	Live Oak Bayou	Prehistoric	Left	Above Bayou Lamoque; opposite and between Port Sulphur items

*Listed on National Register of Historic Places

Source: State Site Files, Division of Archaeology and Historic Preservation, Baton Rouge, Louisiana, as of 15 May 1981.

within the Manchac survey item. Shenkel identified the site as the remains of a Coles Creek period camp, based on the presence of Pontchartrain Check Stamped sherds (Phillips 1970). A later collection by D. Woodiel and G. Castille in November, 1976 consisted of seven Baytown Plain sherds. The eroded condition of the riverbank suggested that the site may have entirely washed away.

Davis et al. (1979) reported two historic artifact scatters, site 16PL78 and a possible site, Y16PLA, within the Bayou Lamoque survey item. The Harris Bayou site, 16PL78, consisted of an accumulation of oyster shell and historic material dating to the late 19th and early 20th centuries (Davis et al. 1979). The Hack's Bayou site, Y16PLA, consisted of an accumulation of oyster shell with bricks and other historic material dating to the early 19th through the 20th centuries (Davis et al. 1979). Because of the suspect nature of Y16PLA, it was not included in Table 3.

Cartographic Review

During the course of this study, hundreds of cartographic sources were examined to determine the locations of cultural features and to assess the effects of geomorphological processes along the batture. Several research centers were visited. The greatest amount of data was available at the Library of Congress, Geography and Maps Division in Washington, D. C. Each map file, under the headings of Louisiana, Mississippi River, Iberville, St. James, St. Charles, Orleans, St. Bernard and Plaquemines Parishes were examined. These files consist of chronologically organized, uncatalogued maps. The earliest maps in the map files for both Louisiana and the Mississippi River date to the 17th century. In addition to the map files, atlases and other pertinent sources of information were examined. Historic and modern navigation charts, topographic maps, and aerial photographs were examined at the District Library, U.S. Army Corps of Engineers, New Orleans and the National Cartographic Information Center in Reston, Virginia.

The cartographic sources fell into two groups. The first group, historic cartographic sources, consisted of materials from the historic period before 1900. The second group, modern cartographic sources, was composed of 20th century records. Historic cartographic sources included hundreds of maps, navigation charts, plat maps, survey marker descriptions and surveyor field notes. Often the scales of the early maps were too small to be useful. Despite the vast quantity of material reviewed by Iroquois Research Institute for this study, the results were decidedly negative.

Examination of modern cartographic sources such as topographic maps and aerial photographs proved to be slightly profitable. Structures like the Seatrain Terminal and the Lake Borgne Canal Lock and its associated buildings were clearly indicated on topographic maps. The aerial photographs, flown in the 1930s and 1950s, were of varying quality. Photographs flown on sunny days, due to their well defined shadows, proved to be better indicators of structures standing in clearings. Structures located in wooded areas were often difficult to identify, even when their exact locations were known. Since the battures in Work Packet 5 were predominantly wooded, the time and effort required to examine pertinent aerial photographs was not productive.

Despite the fact that the historic and modern cartographic sources were generally not useful on a site-specific basis, it was possible to observe general socio-economic and geomorphological trends along the Mississippi River in southern Louisiana. The most obvious trend was the shift from the agriculturally-oriented society of the 19th century to the industrially-oriented society of the 20th century. After the Civil War, many large plantations were subdivided into smaller landholdings. As industrial development along the river increased many of the remaining large plantations and even many of the smaller farms disappeared. This is strikingly evident when comparing the Mississippi River Commission charts of 1873 and 1894 with modern U.S.G.S. quad maps. Population growth, stimulated by the changing economy, was reflected by the expanding boundaries of cities and towns. It was evident from modern cartographic sources that farming and animal husbandry were still practiced along the banks of the Mississippi River of southern Louisiana, but not to their former extent.

Cartographic sources, particularly the early 19th century plat maps, were very useful for tracing the riverbank changes caused by erosion and deposition along the batture. As explained later, this information is useful in interpreting archeological remains occurring near the riverbanks and determining their former locations.

Prehistoric Cultural Development and Ethnohistory of the Study Area

The prehistory of the eastern United States can be divided into three broad developmental stages. These are the Lithic stage, the Archaic stage and the Formative stage. Muller(1978) suggests the following period names for the region of the Southeast:

Paleo-Indian	ca. 10,000 B.C. - 6000 B.C.
Archaic	6000 B.C. - 700 B.C.
Sedentary	700 B.C. - A.D. 700
Late Prehistoric	A.D. 700 - A.D. 1540

These periods can be used to characterize the entire cultural sequence of the southeastern United States and have been further refined at the local level.

The earliest evidence of man's occupation of the New World has been grouped into a period postulated by Krieger (1964) as the Pre-Projectile Point or the Chopper-Scraper stage, reputedly characterized by large crude percussion-flaked tools that possibly represent an ancient substratum for later technological developments in North America. Evidence of the Pre-Projectile Point stage is tentative since associated sites are poorly dated.

The earliest well documented period in the Southeast is the Paleo-Indian, distinguished by lanceolate projectile points such as Clovis, Folsom, and Dalton points. On the Plains, where it is clearly identified, the economy was oriented toward big game hunting and the social organization was characterized by small migratory groups. In the

Southeast, Paleo-Indian social organization was probably comparable, but settlement was apparently oriented toward river valleys (Muller 1978; Byrd and Neuman 1978). The number of people living in southern Louisiana during the Paleo-Indian period was probably small.

Paleo-Indian sites in southern Louisiana occur mainly as isolated surface finds on river levees and Pleistocene terraces. At Avery Island, a subsurface Paleo-Indian component was excavated containing stone, bone, and wooden artifacts. These artifacts were found near but not in definite association with Pleistocene fauna (Gagliano 1967). Another Paleo-Indian occupation has been reported at the Vatican site in south central Louisiana (Gibson and Servello n.d.).

Environmental changes at the end of the Pleistocene encouraged a change in the economy and settlement patterns characterized by distinct cultural variations. An efficient, broad-based economy of hunting, gathering, and fishing developed, as well as a more complex technology as reflected by the artifact inventory (Caldwell 1958). The Archaic period, as it is called, is identified by chipped and ground stone tools, atlatls, grinding stones, fishhooks, and various projectile points. The large number of shell middens along the Louisiana coast underscores the importance of shellfish gathering as a basis for subsistence.

The distinction between the late Archaic and early Sedentary cultures is not as clear cut as the period divisions imply. The Poverty Point complex exhibited characteristics of both, representing a continuation of basic Archaic patterns and added to it a number of innovations. Technological changes are evident such as microliths, baked clay balls, unique projectile points, steatite bowls and fiber tempered pottery.

Construction of large earthworks and mounds by Poverty Point people, implies greater sedentism, status differentiation and more complex social organization. Long distance trading networks facilitated the exchange of steatite, copper, quartz, and galena. Ford (1969) and Webb (1968) hypothesized that this level of cultural complexity could only be attained once a stable productive economy based upon maize agriculture was introduced. Nevertheless, there is little evidence supporting the existence of agriculture in Poverty Point contexts. It is equally possible that the diversified exploitation of the abundant natural resources present in the area was an adequate basis for Poverty Point social organization (Brain 1971).

Richard I. Ford (1974) has proposed a developmental model for complex non-agricultural societies applicable to the Poverty Point culture. He suggests that status differentiation developed to insure exchange, allowing the development of relatively permanent settlements and dense populations despite seasonal and annual variability in wild food production.

Characteristics of the following Sedentary period include the development of surface-textured pottery, sedentary lifestyles, more complex social organization, and the probable introduction of agriculture. In coastal Louisiana, it is evident that environmental conditions inhibited the extent to which a fully Sedentary adaptation could develop.

The initial Sedentary period within southern Louisiana is known as the Tchefuncte period, extending roughly from 55 B.C. to A.D. 100. Like the Archaic period, the Tchefuncte period is characterized by an economy based largely on hunting, fishing and gathering. A widespread cultural diagnostic of the Tchefuncte period is grog or vegetal tempered pottery with poorly compacted paste. Pottery with plain surfaces is most common but decorated pottery with curvilinear or geometric designs also occurs. Included in the artifact inventory are tubular clay pipes, cut canine teeth, shell gouges, bone and antler tools, conch shell containers, and balls or cylinders of fired clay (Ford and Quimby 1945). Tchefuncte sites are characterized by shell middens and small conical mounds located mainly on old lakeshore beaches of Lake Pontchartrain and on the Chenier Plain around Grand Lake.

The Marksville period, following Tchefuncte, is a local southeastern manifestation of the Hopewell interaction sphere, influencing much of eastern North America from circa 100 B.C. to A.D. 500 (Caldwell 1964). Diagnostic of the Marksville period are ear spools, platform pipes, effigy figures, and elaborate ceramic decoration consisting of curvilinear motifs and zoned rocker stamping. Widespread exchange networks are evidenced by mica, copper, and galena trade artifacts. Extensive burial complexes are present at the Marksville site in Avoyelles Parish and the Crooks site in LaSalle Parish. Differences are evident in southeastern Louisiana where large complexes are absent and isolated burial mounds and middens more common. Marksville component sites in southeastern Louisiana include the Gibson site in Terrebonne Parish and Coquelle in Jefferson Parish.

Following Marksville are the Baytown and Coles Creek periods, forming a developmental continuum characterized by truncated pyramidal earth mounds and new pottery types. Characteristic of the Baytown period are shell middens and mound complexes. It has been hypothesized that these mound complexes, located on crests of natural levees along the Mississippi River, served as ceremonial centers for surrounding agricultural communities (Gagliano et al. 1975). Alternatively, Gibson (1978) has hypothesized that the rich and varied environment of southeastern Louisiana allowed communities to be supported solely by the intensive collection of natural resources.

The onset of the Coles Creek period was marked by a drastic increase in the number of sites in southern Louisiana, interpreted by Haag (1971) as an increase in population. Equally probable is that earlier sites of the Baytown period have been buried by alluviation (Davis 1977) or by subsidence thus distorting the nature of demographic change. There is some evidence of seasonal exploitation and utilization of coastal resources (Springer 1973), but better data are necessary for understanding of Baytown and Coles Creek subsistence. Coles Creek components exist at the Vacherie site in St. John the Baptist Parish and the Sims site in St. Charles Parish (Davis, personal communication).

During the Plaquemine period, A.D. 1000 to 1700, cultural continuity and elaboration are evident. Quimby (1951), at the type site of Medora, defined the Plaquemine period on the basis of diagnostic traits including plazas, truncated pyramid mounds, and ceramic types such as Plaquemine

Brushed. Early in the period there is evidence of seasonal exploitation: small groups dispersing during spring and summer, and congregating into larger villages in the fall and winter.

The social and economic characteristics of the Plaquemine period become increasingly more complex later in time. Large villages were located on broad natural levees (Altschul 1978). Plaquemine components are known at the Fleming site in Jefferson Parish and at the Sims site in St. Charles Parish (Davis, personal communication). There are tentative indications that maize was part of the subsistence base at the Fleming site. McIntire (1958) has suggested that population decline during the Plaquemine period occurred in southern Louisiana. Davis et al. (1979), on the other hand, have suggested that such a decline is an illusion created by incomplete site data or temporally unequal time units.

The Mississippian culture of the Late Prehistoric period (Muller 1978), between A.D. 1400 and 1700, represents the climax of cultural complexity. Populations began to concentrate in alluvial valleys (Williams 1956) where they cultivated maize, beans and squash. Truncated pyramidal earth mounds and ceremonial centers are characteristic of this period. Major changes in ceramics are represented by introduction of shell temper and design motifs associated with the Southeastern Ceremonial Complex (Waring and Holder 1945).

Mississippian component sites are uncommon in coastal Louisiana probably because of inadequate farmland. Several sites, such as the Bowie site in La Fourche Parish, Avery Island, the Bayougoula site in Iberville Parish, the Fleming site in Jefferson Parish, and the Sims site in St. Charles Parish have been recorded (Davis, personal communication).

Historically, several Indian groups inhabited the vicinity of the Work Packet 5 survey area. European explorers, missionaries and other travelers along the Mississippi River in the 17th and 18th centuries often recorded encounters with Indians. Frequent warring forced the Indians to move repeatedly, resulting in inconsistencies and contradictions in the reported locations of villages and camps. For example, the Quinipissa and the Tangipahoa were encountered by La Salle in the vicinity of New Orleans about 1682. In February 1699 when Iberville ascended the Mississippi, he did not meet any Indians until he was above present-day Donaldsonville, approximately 45 miles upstream from New Orleans. This has led archeologists to speculate that either the Indians moved out of southernmost Louisiana during the winter months or that this area was sparsely populated by the late 17th century (Giardino, personal communication).

The majority of Indian groups in the study area belonged to the Muskogean language family and included the Bayougoula, Quinipissa and Houma; the Tunican linguistic stock was represented by the Chawasha (Driver 1969; Giardino, personal communication; Swanton 1911, 1952). The following brief tribal histories have been summarized from Swanton (1911, 1952).

The Bayougoula were first encountered by Iberville in 1699 on the west bank of Bayou La Fourche. At that time, the Mugulasha were also living there, and Iberville established alliances with both tribes. Before

leaving for Europe, Iberville made peace between the Bayougoula and the neighboring Houma, but by the time he returned, the tribes were again at war. Iberville renewed the peace in 1700. In May of the same year, Bienville, who had been exploring the Red River, brought word to Iberville that the Bayougoula had wiped out the Mugulasha and were asking the Acolapissa and the Tioux to move into their village. In 1706, the Taensa, driven south by the Yazoo and the Chickasaw, retreated to the Bayougoula and, after living with them for a short time, wiped most of them out. The survivors fled southward and were given a place below New Orleans by Bienville. By 1758, the Bayougoula united with the Houma and were no longer noted individually in any historic records (Swanton 1911:274-279).

The Houma, located north of Bayou La Fourche, were first visited by Tonti in 1686, who formed an alliance with them. Iberville initially contacted them in 1699, and returned the following year, leaving a missionary to build a church. Shortly thereafter, the Tunica moved in with the Houma, but this peaceful relationship ended in 1706 when the Tunica destroyed many of them and drove the rest down the Mississippi. After a short stay near New Orleans, the Houma settled in present-day Ascension Parish where they apparently remained until after the Louisiana Purchase in 1803. After 1805, some had gone to live with the Atakapa near Lake Charles; others moved to the coastal areas of Terrebonne and La Fourche Parishes (Swanton 1952:185-186).

The Quinipissa, located on the right bank of the Mississippi above New Orleans, were first met by La Salle in 1682. After greeting the initial wave of explorers with hostility, they made peace with Tonti in 1686. Iberville was not able to locate them in 1699, and later learned that the Quinipissa were identical to or had been absorbed by the Mugulasha and were subsequently destroyed by the Bayougoula in 1700 (Swanton 1911:279-280, 1952:208).

The Chawasha, originally located between Bayou La Fourche and the Gulf of Mexico, may have been responsible for an attack on the remains of De Soto's army in the late 1500s. They have also been accused of collaborating with the Washa in a raid on an English ship in 1699. However, the Chawasha were generally on friendly terms with the French, as evidenced by their participation in an attack on the Chitimacha in 1707 to revenge the murder of a French Missionary. In 1712, Bienville moved them to a location on the right bank of the river, just below English Turn, where they were attacked by a party of Chickasaw, Yazoo and Natchez in 1713. Prior to 1722, the Chawasha moved slightly downstream and across the river, where they were again attacked, in 1730, by a group of Negro slaves sent by Governor Perrier of New Orleans. The Governor had permitted this assault to ease the growing tension among the white inhabitants of New Orleans following the Natchez uprising of 1729 and the subsequent massacre of Europeans at Natchez. Although accounts differ, the Chawasha were probably not wiped out in this raid, as later references were made to them by several writers. They were mentioned in association with the Washa near Les Allemands above New Orleans in 1739 and were incorporated into the Washa village by 1758. There were no certain references to them after this date (Swanton 1911:300, 1952:201-202).

Historic Overview

Although Spain conducted explorations of the Mississippi Valley in the 1500s, present-day Louisiana saw no lasting European colonization until the late 1600s. At that time, Louis XIV of France was anxious to secure additional portions of the New World free of British and Spanish influence. Hence, in 1682, he commissioned Robert Cavalier de la Salle, who traveled south from Illinois, planted the flag for France, naming the area he explored, Louisiana, in honor of his king (Davis et al. 1979:72-74).

Almost 20 years elapsed before the French undertook further exploration along the Mississippi River. In 1699, Louis XIV dispatched Pierre le Moyne, Sieur d'Iberville, to chart the region. After travelling to the Gulf, stopping at Mobile Bay and Biloxi, Iberville ascended the Mississippi River. He visited the Red River confluence and returned to the mouth of the Mississippi by way of Lake Pontchartrain. His brother, Jean-Baptiste le Moyne, Sieur de Bienville, accompanied Iberville until the return voyage, at which time he chose to continue down the Mississippi River. About 15 miles south of present-day New Orleans, Bienville encountered a party of British explorers. Explaining that France claimed the territory, Bienville convinced the English force to depart. The incident led to the designation of this place as English Turn (Davis et al. 1979:75).

Bienville was primarily responsible for the settlement of the Lower Mississippi Valley. He originally established a capital at Fort St. Louis near Mobile Bay, but realizing that this location was not suitable for protecting the colony from British or Spanish encroachment, Bienville ordered land cleared around present-day New Orleans in 1718 and moved the capital there in 1721 (Desmond 1970:5; Davis 1968:146).

The selection of New Orleans as a capital was the driving force behind the beginning of the French settlement up and down the Mississippi River. The location was critical because it allowed France to control access to European markets from the Mississippi Valley (Desmond 1970:5; Davis 1968:146).

To protect New Orleans and its foothold on the Mississippi, the French also constructed a string of forts up and down the river to guard against its colonial rivals, Britain and Spain. Two such forts constructed below New Orleans at English Turn were Fort St. Leon and Fort Ste. Marie. Earlier they had established Fort de la Boulaye, located south of English Turn near Phoenix (Davis et al. 1979:75).

From an economic viewpoint, Louis XIV initially hoped the colony would provide much needed gold and silver. When this failed to occur, the King ceded the colony in 1717 to a company directed by financier John Law. In 1719, Law reorganized the concern and entitled it the *Company of the Indies*. This company served as the catalyst to European settlement of present-day Louisiana, importing both colonists and slaves. Although it went bankrupt in 1720, it continued to recruit colonists until Louisiana became a royal colony in 1731 (Hansen 1971:39).

As the colonists obtained land grants, they established plantations and farms along the Mississippi and Red Rivers. The charter of the Indies Company required it to fill the colony with 6,000 settlers and 3,000 slaves within 10 years. Hence, some of the colonists the company recruited were indigents, political undesirables, or ex-convicts newly-released from prison. The company often arranged marriages for these individuals prior to their debarkation from France. According to one author, the couples were "paraded through the streets of Paris, but whether to symbolize their relations or from fear of some attempt at escape, a small chain bound together each husband and wife" (Toups n.d.: n.p.).

Descendants of early French colonists were known as Creoles. For the first 100 years of Louisiana's history, Creoles outnumbered Americans of Anglo-Saxon descent by two to one. As late as 1840, they predominated in the southernmost 15 parishes (Hansen 1971:87). In addition to the French colonists and their black slaves, German-speaking Alsatians and Lorrainians immigrated to Louisiana during the early colonial period, as did Swiss who were recruited for military duty.

These German-speaking colonials had been recruited by the Indies Company and originally settled along the Arkansas River. In 1722, they traveled to New Orleans and demanded new supplies or passage back to Europe. During a conference with Bienville, they accepted his offer to clear land about 25 miles above New Orleans (Deiler 1969:38). They settled primarily along the right bank of the Mississippi in an area known subsequently as "La Côte des Allemands," the coast of the Germans, and known locally as the German Coast. This region is located in present-day St. Charles and St. John the Baptist Parishes.

During the early years of colonization, the economy of French Louisiana barely supported the population. The prevailing European philosophy of mercantilism held that colonies existed solely for the benefit of the mother country. As a result, colonies often suffered from the lack of financial investment.

The problem of making the colony of Louisiana a valuable asset to France was discussed in a letter dated June 1, 1757 to France from Monsieur Accaron. It revealed that colonists were able to grow crops of value to France, such as tobacco, but complained that there were too few ships calling at Louisiana for shipment of the crop to France. Accaron also noted that indigo was in its infancy as a cash crop. He suggested that the only solution to bringing about a more profitable colony would be to convince French companies to invest more funds in Louisiana (Accaron 1757).

Louisiana was not a flourishing colony when Spain obtained a large part of the territory from France in 1762. Although New Orleans and all the French territory west of the Mississippi River were ceded to Spain that year as a result of the French and Indian War, the colony did not become one of Spain's more successful ventures. Like the French, the Spanish viewed the colony more as a means to offset British influence in the New World than as a valuable commercial property (Hansen 1971:41). As

had been true of France moreover, Spain also failed to invest extensively in the colony. Hence, the colony continued to stagnate during the Spanish period.

Although Spain did little to stimulate the local economy, the population of the colony increased during its control of Louisiana. Some of the first arrivals came from modern-day Nova Scotia and New Brunswick. These Acadians had been forcibly expelled by the British during the French and Indian War, or Seven Years War, of 1756 to 1763. Many of today's inhabitants of St. Charles, St. James, and Ascension Parishes are from this stock (Desmond 1970:6). Their descendants are known today as Cajuns (Hansen 1971:41, 84).

Several years later, Spain welcomed new arrivals from the newly-created United States. Anxious to establish a buffer between Louisiana and British Canada, the Spanish granted American settlers free sections of land and also exempted them from taxation. The Americans generally settled in the northern parishes of modern-day Louisiana and in Spanish West Florida, which was located along the east bank of the Mississippi River north of Lake Pontchartrain (Hansen 1971:43).

When the United States purchased the Louisiana Territory in 1803, after a brief period when Louisiana was held again by France, the territory entered an era of heretofore unknown prosperity (Hansen 1971:43-44).

During the American period, the cultivation of sugar as a cash crop became an important aspect of Louisiana's economy. In southern parishes, sugar soon became dominant, even though cotton, planted in the northern provinces, provided more income for the state. By 1853, cotton production was valued at \$68 million dollars while the sugar crop measured in the tens of thousands of hogsheds (Cable 1884:236).

Sugar plantations soon proliferated along both sides of the Mississippi River. Numerous plantations were situated along the Mississippi River in the vicinity of all of the survey items included in this study. They were found from 180 miles north of New Orleans to about 60 miles south of the city. This area of rich alluvial soil proved extremely well suited to sugar cultivation (Schmitz 1977:13). The rise of a sugar aristocracy had great effect on the cultural and economic development of Louisiana.

Sugar plantations bore a striking resemblance to one another. Those located immediately along the Mississippi River were often constructed at right angles to the river on narrow strips of land called rangs. A levee with a road upon it was constructed inland from the riverbank (Reclus 1855:12). Settlers were obliged to construct levees, or dams to protect the land from inundation. Public roads were built upon the levees and bridges constructed when necessary (Stoddard 1812:165). The planter's house stood behind the road. In order to protect it from periodic flooding of the river, many planters built the house on brick piers several feet above ground. Many plantation houses followed the Greek Revival style of architecture (Desmond 1970:9; Reclus 1855:12; Hansen 1971:138-139).

Plantation homes were usually two stories high with wide galleries spanning the second level. They provided respite from the oppressively hot weather. These galleries, resting upon white columns, were called aux quatre vents. The houses were also often surrounded by oak trees which provided much-needed shade (Desmond 1970:8).

Behind the plantation house, planters constructed outbuildings, kitchens, and offices. The sugar house was an essential part of each planter's operation. Almost all planters constructed these dependencies where the cane was processed due to the prohibitive cost of transporting the bulky stalks (Schmitz 1977:24). The overseer's house and slave quarters, which formed either a single or double row of frame or brick cabins, were found further inland from the river (Hansen 1971:138).

Sugar plantations were economically the dominant agricultural producers of the area, but non-slaveholding farmers comprised the majority of the white population in the sugar parishes. Often of Creole, Cajun, or German descent, these farmers cultivated subsistence crops such as corn and potatoes. Most of the lots comprised fewer than 50 to 100 acres, and produced crops for the consumption of the immediate family. Any excess crops were sold to plantations or taken to New Orleans for sale in small markets (Shugg 1939:24-27).

In 1850, three out of four rural holdings in the sugar parishes were classified as farms. However, plantations contained seven times the acreage. This superiority of acreage permitted planters to assume a political and economic dominance over farmers (Shugg 1939:27).

During the Civil War, sugar production virtually ceased along the Mississippi River. It did not recover from the effects of the war until the late 1870s but after that time sugar production increased rapidly. By 1890, production reached its second highest output since the introduction of sugar planting (Sitterson 1953:208-209). Following the Civil War, large corporations, with considerable assets from northern investors, consolidated holdings. Central factories, often located in New Orleans, began to manufacture sugar (Sitterson 1953:258). This consolidation separated cane cultivation from sugar production.

In addition to sugar, rice became an important cash crop in the southern parishes of Louisiana after the Civil War (Bouchereau 1873:22-34). Often cultivated on lands previously reserved for sugar, rice gained favor among planters because it was well suited to poorly drained soil. Rice became an important staple in the general study area by the 1870s and was of greatest importance south of New Orleans and in southwestern Louisiana. As sugar production declined, plantations along the Mississippi were divided up into smaller plots or simply abandoned (Davis 1968:150).

Since 1945, the area surrounding New Orleans has seen substantial industrial expansion. Discoveries of salt, sulphur, natural gas, and petroleum helped in the development of industries along the Mississippi (Davis et al. 1979:92). Extensive oil refineries have been constructed along the east bank of the Mississippi in St. Charles Parish. Across the river, sugar is still produced, but the region has also experienced the

development of oil companies, truck farming, and commercial fishing industries (Louisiana Department of Public Works and St. Charles Parish Development Board, n.d.). Bauxite, aluminum, and chemical plants are scattered along the river from Baton Rouge to New Orleans.

Even the trembling earth of the delta is capable of supporting industry. At Port Sulphur, ships haul away brimstone washed up by steaming water from vast deposits deep beneath the marshes some ten miles behind the river. Oil derricks now stretch through swampland and bay, even far out into the Gulf itself, and at Grand Ecaille is found the deepest oil well in the world. Elsewhere, higher up the Mississippi, changes have also come in recent times. World War I revived the heavy cargo traffic on the river, and the creation of the Federal Barge Line shortly thereafter demonstrated the economy of moving such goods as oil, metal, grain, building materials, salt, sulphur, chemicals, and ores in the huge barges which when lashed together in integrated tows, are now capable of carrying over 35,000 tons of oil, the equivalent of two oceangoing tankers. Modern diesel-powered towboats have succeeded the old lordly steamboats as kings of the river, and if their radio telephones and radar seem to leave little room for the glamor of the old river-pilot days, at least they have succeeded where the old monarchs failed (Davis 1968:151).

Iberville Parish

Manchac Revetment

Sieur d'Iberville was one of the first explorers of the Manchac Bend area. In 1699, Iberville explored Bayou Manchac in search of a short passage to the Gulf Coast. His men named the passage the "River Iberville" in his honor, but French settlers later used its old Indian name "Manchan" which was said to mean "rear entrance." This attempt to find a shortcut to the Gulf Coast continued to influence the area near the Manchac Revetment during the remainder of the colonial period in Louisiana (Bragg 1977:213).

In 1762, as a result of the secret Treaty of Fountainebleau, New Orleans, and the area in Louisiana west of the Mississippi River became Spanish territory; however, Louisiana remained under formal French control until 1766. The Treaty of Paris of 1763 had a direct impact on the area surrounding the Manchac Revetment. Spain ceded East and West Florida to Great Britain, while the British acquired the area north of New Orleans and east of the Mississippi River from the French (Davis 1977:97). Bayou Manchac was the line of division between the British and Spanish colonies (Bragg 1977:213).

After gaining control of West Florida, the British began to plan an effective way to economically exploit the area for the benefit of the British Empire. Captain James Campbell with a small force was sent from

Mobile to examine the feasibility of using the River Iberville as a waterway to the Gulf of Mexico for securing control of the river away from rival colonial empires. Campbell's personal inspection of the area of contact between the Iberville and the Mississippi convinced him that the idea of an alternative channel to the Gulf was possible. Local French plantation owners, fearing Spanish control of the area, received British permission to move to the east bank of the Mississippi. One planter, Monsieur Depart, provided fifty negro slaves to help the British clear the obstructions from the Iberville River (Born 1963:47). The British feared that the Spanish would react with hostility to their efforts and a decision was reached to build a British fort consisting of a blockhouse with a small stockade fort to protect this valuable trade artery. The fort was named Fort Bute (Born 1963:48).

The British had many problems constructing the fort. Cost overruns were caused by spring flooding of the Iberville and harassment by Indians who stole supplies and liquor. The fort was finally put into operation on a temporary basis in October, 1765, with approximately 120 men (Born 1963:51-53).

The British fort motivated the Spanish commissioner, Antonio de Ulloa, to build a fort called San Gabriel in the Iberville district, across from Manchac. The British later called this fort Spanish Manchac (Born 1963:96).

The area near Bayou Manchac, believed to be ideally situated for trade, became economically important after the construction of Fort Bute. The British, in 1769, demonstrated their interest in the area by increasing the size of the garrisons at both Fort Bute and Fort Rosalie at Natchez by more than 2,000 troops (Born 1963:106). The British controlled the fort until the Spanish invasion of September 7, 1799, at which time the British surrendered and the Spanish took control (Bragg 1977:213).

The area at the confluence of Bayou Manchac and the Mississippi River again assumed military importance during the War of 1812 when General Andrew Jackson ordered the confluence closed in 1814 to impede the British from using the River Iberville against the Americans (Bourgeois 1957:22).

In addition to the construction of military forts, an earth dam was built across the entrance to Bayou Manchac in 1828 to prevent flooding of plantations below the bayou. In the 1850s a plan was discussed to reopen the bayou to serve as a floodway to handle high water during floods. However, the Corps of Engineers did not support the plan and the idea was dropped (Bragg 1977:213).

Although there were various small landholdings near the Manchac Revetment study area, perhaps the largest and among the most successful plantations was that of Forlorn Hope. The very severe meander of the Mississippi River at Manchac forms a peninsula, known as Plaquemines Point, on the left bank. The Forlorn Hope Plantation traverses this peninsula, covering approximately 1,200 acres fronting the river both upstream and downstream of the point (Yakubik et al. 1981:23). The upstream segment of the plantation fronts the river approximately 600 meters from the upstream border of the Manchac Revetment study area.

Joseph Anger and Andrew Gourier in 1845 bought the Forlorn Hope Plantation from David Chambers and Alvarez Fish to expand their landholdings. Joseph Anger then acquired the entire plantation from the heirs of Gourier (Yakubik et al. 1981:21-22). Economic reversal followed this transaction, and in 1877-1878, production had fallen to 270 hogsheads of sugar as compared to 760 in 1861-1862 (Bouchereau 1879:18). Anger's death in 1883, coupled with the unsuccessful operation of the plantation, led to the rental of parts of Forlorn Hope. The plantation was sold in 1885 to J. O'Scannell and J.A. Lafaye, and subsequently to Herman Zubervier who changed the name of the plantation to Granada. Following the discovery of oil on the land in 1949, the plantation's employees worked on both oil production and cattle ranching (Yakubik et al. 1981:24-25).

St. James Parish

Rich Bend Revetment

Of great significance to the economic and social development of St. James Parish were the fertile alluvial soils conducive to the cultivation of sugar cane. The land along the river in St. James Parish, and specifically near the area of the Rich Bend Revetment was suitable for the cultivation of this crop. Creole farmers, enjoying economic prosperity, built large plantations and plantation homes.

The large family of Valcour Aime was among the most important contributors to the history of the area. Valcour Aime was born in 1797 in St. Charles Parish and moved, after his marriage to Josephine Roman in 1819, to St. James Parish. After an exchange of property, stipulated in the marriage contract, Valcour Aime established his home at what was to become known as the St. James Refinery (Toledano 1969:212-213).

Aime provided his children with plantations of their own. Edwige, his oldest daughter, acquired Richbend, a small sugar plantation managed by her husband, Florent Fortier, located opposite College Point, approximately 1.5 kilometers upstream from the Rich Bend Revetment study area. His daughter Josephine received St. Joseph Plantation after her marriage to Alexis Ferry. His third daughter, Felicite Emma, received Felicity Plantation when she married Alexandre Septime Fortier. Felicie, the youngest daughter, married Alfred Roman and lived at a Roman family plantation, Cabanocey (Toledano 1969:219). St. Joseph Plantation was located approximately 400 meters downstream from the downstream limits of the Rich Bend Revetment study area. Felicity Plantation was located downstream from and contiguous to St. Joseph Plantation. Cabanocey Plantation was located just upstream from Richbend Plantation.

Among the most important plantations in the project area is Oak Alley, named for its avenue of oaks facing the Mississippi River. Its plantation lands abut most of the downstream area of the Rich Bend Revetment. The plantation house was built in 1836 for J.T. Roman, III, brother of a Louisiana governor (Bragg 1977:233). This plantation is also known as Bon Sejour, meaning good respite (Cooper 1961:84). Oak Alley

bears a strong resemblance to the plantation home of Valcour Aime, suggesting that both may have been designed by the same architect (Toledano 1969:214-215). The Roman family lost Oak Alley as a result of the Civil War when it passed to the Sobral family (Labouisse 1979:n.p.).

Belmont Revetment

Plantations adjacent to the Belmont Revetment include Belmont, Belle Alliance, Bourbon, and Longview plantations. Belmont Plantation was located approximately 2.5 kilometers upstream from the Belmont Revetment study area. Belle Alliance Plantation, later called Hester Plantation, and Bourbon Plantation are located downstream from Belmont. The Bourbon Plantation lands lie contiguous to the Belmont Revetment study area. The Longview Plantation, perhaps the best documented, is located 4.5 kilometers downstream from the Belmont Revetment study area.

A number of the plantations were large sugar producers. Belle Alliance produced 620 hogsheads of sugar in 1861-1862 and 120 in 1871-1872; Bourbon Plantation, owned by the Ferry family, produced 516 hogsheads in 1861-1862 and 178 hogsheads in 1871-1872, reflecting a decline in output following the Civil War (Bouchereau 1872:23). The owners of Belmont Plantation produced 1,035 hogsheads of sugar in 1861-1862 and 262 hogsheads in 1881-1882 (Bouchereau 1882:61).

Longview Plantation was built in 1790 by Joseph Gebelin (Labouisse 1979:n.p.). This plantation was first called Longue Vue; anglicized to Longview by 1885. The last owner was James Hymel who ran the plantation for a period of some 30 years (Butler 1980:109). Moved back from the river in the early 20th century, the Longview Plantation house was abandoned and is in a deteriorated condition (Labouisse 1979:n.p.).

An extensive sugar operation was once conducted at Longview. The factory had a grinding capacity of 550 tons of sugar per day until it was rebuilt during the early part of the 20th century after which irresolvable technical problems developed. The devastating impact of the mosaic disease in the 1920s signaled the end of the factory (Butler 1980:109).

It is noteworthy that the plantation had a 36-inch gauge railroad built in 1911, approximately five miles long, with 50 double-truck, 10-ton cars and two locomotives (Butler 1980:109).

St. Charles Parish

Luling Revetment

The history of St. Charles Parish begins with the early French exploration of the lower Mississippi River. The first settlers were German-speaking colonists brought to Louisiana by John Law's Indies Company. This led to the designation of the area as the "German Coast," sometimes known as the "Golden Coast." According to J. Hanno Deiler,

Floods, fever, lack of plows and draft animals, and Indian forays, reported as late as 1748, made the life of these German pioneers a difficult and hazardous one, but with characteristic energy and frugality, they soon made their settlements known as the "Golden Coast." (Deiler 1909:10-100, cited in Historic Records Survey 1937:4).

Agriculture in the parish turned from sugar to rice early in Reconstruction. St. Charles was one of the top three producing parishes in the state (Yoes 1973:114; Bouchereau 1973:28-30).

Among the most important plantations near the Luling Revetment project was Esperanza, bought by Edward August Dufresne before the Civil War and still owned by the Dufresne family a hundred years later (Yoes 1973:180). Ashton Plantation, adjoining Esperanza, was bought by Edward Dufresne in 1843. The two plantations together formed the largest plantation in Louisiana owned by a single individual (Yoes 1973:180). Both are contiguous to the Luling Revetment. Ambrose Lanfear was a later owner before the Civil War (Schmitz 1977:52). William A. and George F. Feret bought Ashton in 1866. It was later sold by the sheriff in 1872. Olgive Graham and associates bought Ashton from William A. and George F. Feret in 1872.

Ashton Plantation later went to John A. Morris who was interested in improving sugar cane cultivation. He tested tile drainage in 1878 and is believed to have been an innovator in experimenting with this method (Sitterson 1953:272). Since tile drains represent one of the most important technological events in U.S. agricultural history, this event could be important. The Ashton Plantation Company later bought the plantation from John A. Morris in 1891 (St. Charles Parish District Court 1965: microfilm).

Fashion Plantation, located approximately one kilometer upstream from Ashton Plantation and the Luling Revetment study area, was once owned by General Richard Taylor. It was destroyed and confiscated during the Civil War. Richard Taylor was the youngest child of Zachary Taylor, elected President of the United States in 1848. In 1851, Richard Taylor bought Fashion Plantation where he developed a large library, acquired an extensive knowledge of English, French, and Spanish literature, established a racing stable, and dabbled in politics, first as a Whig, then in the American Party, and finally as a Democrat (Dufour 1963:3-4).

It is evident that Taylor did not completely adapt to the social environment around Fashion Plantation. Frederick Law Olmsted in his work, Seaboard Slave States, attributes the following observation to Taylor:

The non-slaveowning habitants were "lazy vagabonds" who spent most of their time in "shooting, fishing, and play," complained the planter, who admitted that he "wanted very much to buy all their land, and set them to move away" because they "demoralized his Negroes." He thought it best that slaves "never saw

anybody off their own plantation," and he particularly wanted to prevent their contact with "white men who did not command their respect" (McCrary 1978:28, citing Olmstead).

Orleans Parish

Cutoff Revetment

The Cutoff item embraces a section of river batture where the land has been cultivated since the 1720s. The land on the west bank of the Mississippi downriver from present-day Algiers in the Cutoff area was farmed by nine settlers, as seen on a 1723 map in the Newberry Library, Chicago (Anonymous 1723), illustrated in Plate 3. According to this map, the Cutoff region was inhabited upstream by Sieur Bourbeau, with two buildings, followed going downriver, by the Habitation of Sieur Plaisance with two structures; the Habitation of Sieur La Violette, one building; the Terraine of Sieur Bourbeau, without buildings; the Habitation of Sieur Massy, three buildings; the Terrain of Sieur Jean Hebert, without buildings; the Terraine of Sieur Bonneau, without buildings; the Habitation of Sieur Caussy, one building; and finally the Terraine of Sieur Bigot.

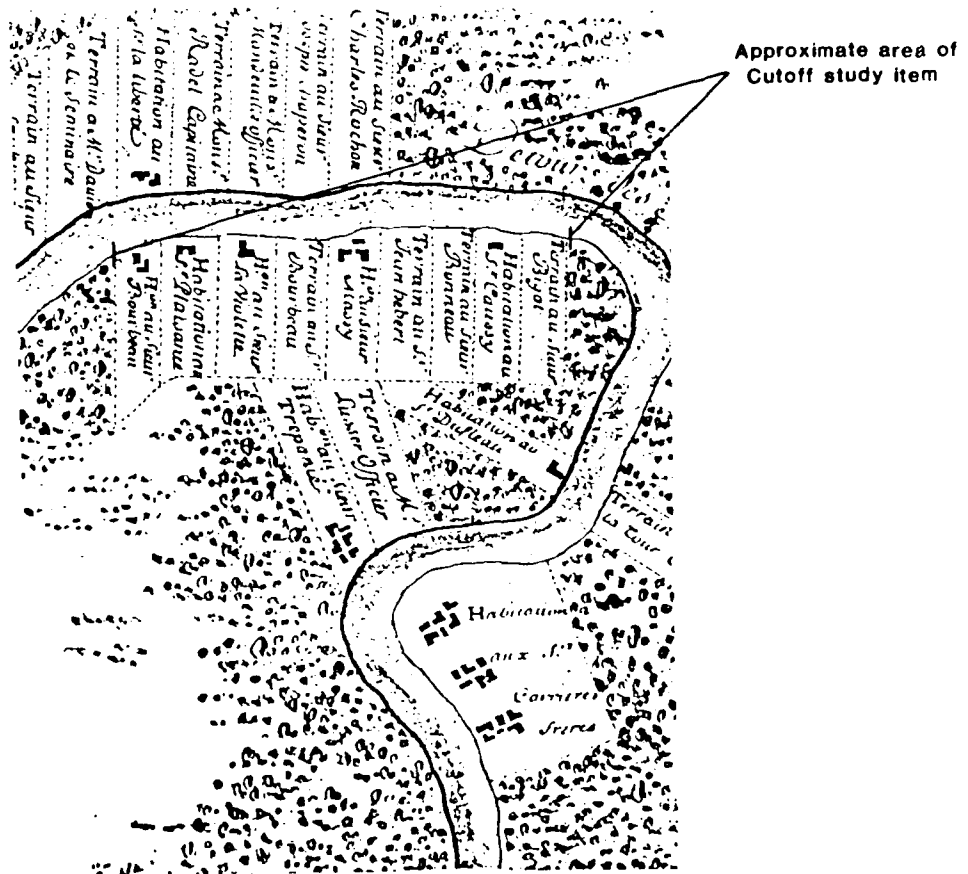


Plate 3. Section of an Anonymous 1723 Map illustrating landholdings along the Cutoff Revetment Item.

Bourbeau's and Plaisance's habitations may have been on part of the present work area, along with La Violette and Bourbeau's lands. As indicated in the 1723 map, Bienville's west bank habitation extended just a little bit further downriver than Pointe St. Antoine, in the general area of the upstream limit of the Cutoff study area.

By the mid 1700s all of the Cutoff region was well established with habitations (Anonymous 1753). The portion of the area later became the Stanton Plantation in the 20th century and was owned by Jean Baptiste Macarty in 1782. Macarty was a prominent French planter whose father, Barthelemy Macarty, had owned 15 arpents of this plantation and whose mother, Francoise Pellerin Macarty, after her husband's death, sold the property (Quinones 1782:n.p.) to Jean Baptiste Macarty and his brother-in-law, Maurice Conway, nephew of Governor O'Reilly. Conway later sold his half-interest in the 15 arpents to Jean Baptiste Macarty (Quinones 1786:n.p.). An arpent is equal to 0.85 acres.

Macarty then added 20 arpents to the tract in 1784 (Pedesclaux 1784:n.p.) which he purchased from Marie Jeanne Lerable, the widow Le Conte. Jean Baptiste Macarty's heirs, Edmond, Barthelemy, and Celeste Macarty, wife of Paul Lanusse, inherited the plantation now at 35 arpents, and Edmond bought out his co-heirs in 1811 (Pedesclaux 1811a: n.p.). Edmond paid \$12,000 in 1811 for a two-thirds interest in the property, which was bounded then by land of the wealthy free woman of color, Constance Larche, and by Sieur Corbon. Buildings were included in this sale.

Four days later, Edmond Macarty sold the plantation to Manuel Andry and his wife Marianne Thomassin (Pedesclaux 1811b:n.p.), and for the two subsequent decades the place was known as the Andry Plantation. Edmond Macarty was not really interested in the property because his principal place of residence was a plantation on the east bank known as the Macarty Plantation, later to become famous as Andrew Jackson's headquarters during the Battle of New Orleans, 1814-1815 (Wilson 1965:22).

During the Manuel Andry tenure, British forces under Sir Edward Michael Packenham landed near New Orleans on the east bank of the Mississippi to attack the city during the War of 1812. The British entered via Lake Borgne and came to Villere's Plantation a bit upriver and opposite Andrys' plantation in early 1815. On the morning of January 8, 1815, British Lieutenant Colonel William B. Thornton, chosen by Packenham to command the attack on the west bank, crossed the river from Villere's canal to the west with approximately 600 men (Dixon 1965:5, 8).

Thornton's objectives were to seize [American General David B.] Morgan's [west bank] position and push on to capture [American Commodore Daniel T.] Patterson's marine battery--before the main attack at Chalmette [Plantation on the east bank] was to commence. If all went well, Thornton was to use Patterson's gun to direct enfilading fire against Jackson's Rodriguez [canal] line and the American encampment (Dixon 1965:8).

"Patterson's marine battery was located in an old lime kiln on the west bank a bit downstream of Jackson's lines" (Dixon 1965:5). This lime kiln has not been specifically pinpointed to a particular plantation, however, Dixon locates it "on the riverfront between the Jourdan and Castanedo plantations" (Dixon 1965:14). This would locate Pattersons' conscripted lime kiln at or near the site of the Intracoastal Waterway where it meets the river at Cutoff.

The locations of the plantations on the west bank during the Battle of New Orleans are designated on an Atlas of the "War in West Florida and Louisiana in 1814-1815" by Major Arsene Lacarriere Latour, an American civil and military engineer who designed breastwork locations for the forces on the west bank (Latour 1816: appendix p.V). The plantations shown by Latour as contiguous to the Cutoff Revetment area are, proceeding downstream, the Castanedo, Lefevre, Mayhew, Duverge, Dupuy, Morin, and Andry plantations. According to Latour, British Lt. Col. Thornton entered the river to cross to the west bank from Villere's plantation, which was opposite part of Andry's and part of Morin's plantations, but "...landed much lower than was his intention, having been carried down by the strength of the current" (Dixon 1965:11).

Dixon states that "...after landing on the Andry plantation near what is known today as the 'Algiers Cut Off,' Thornton marched to the Jourdan Line, where he sought to turn the right of the enemy's position" (Dixon 1965:11). The Americans did not have any breastworks set up on the Andry plantation and evidently no exchanges were fired there. According to Latour, "...having landed his boats on the west bank, the enemy ascended the river in his boats, carrying cannonades and cannon, and keeping close to the bank...discharged 'grapeshot' against ours, who retired as he advanced" (Dixon 1965:11, quoting Latour).

The Americans on the west bank indeed retired as the enemy advanced, and the British made their way all the way upriver through the Cutoff Revetment extent. There was a small encounter on Morin's plantation, another in a saw mill race on Mayhew's, and a third on the Raguet Canal on the lower portion of Jourdan's Plantation (Dixon 1965:13-14).

The Morin Plantation figured prominently in the War of 1812, when, during the Battle of New Orleans on January 8, 1815, the American naval vessel, the "Carolina" was destroyed near the west bank in front of the Morin Plantation. The "Carolina's" captain, John D. Henly, then took command of a square redoubt formed by a brick kiln which he converted to a powder magazine (Dixon 1965:4). This converted brick kiln/powder magazine is potentially the same powder magazine that is known to have survived into the late 19th century at the upper limit of the Andry Plantation. According to Dixon (1965) it was located "a little bit downstream" of Jackson's east bank line. Dixon is vague in describing what he means by "a little bit downstream;" it is a fact that the "Carolina" was blown up in front of Morin's Plantation, upriver and adjacent to Andry's, Plantation, and that Henly went ashore at that point. The powder magazine was probably situated on the boundary line between the Andry and Morin plantations near the middle of the study area.

Several years after the Battle of New Orleans, Manuel Andry purchased the interests of his children and grandchildren in the plantation which they inherited about 1817, following the deaths of Mrs. Andry and one of their married sons (Orleans Parish Probate Court Records 1817, 1818). Later in 1822, Manuel Andry sold the entire plantation and its slaves to his son Michel Andry (Pedesciaux 1822:n.p.).

Michel Andry and his wife, Felicite Aimee Durel, retained the plantation as a country estate and raised sugarcane there for the next 13 years. Their principal residence was a town house in the Vieux Carre. Michel Andry died in 1835 and his estate was inventoried for purposes of succession. This inventory (de Armas 1835:n.p.) provides a glimpse of the structures on the plantation, of its slave population, and of its activities.

It was described as a sugar plantation two and one-half leagues below New Orleans on the right bank of the river, having 35 arpents and 12 toises front and 40 to 80 arpents of depth*. It was bounded at the time by Bosque's land above and by the land of Constance Larche below. It had five or six hundred arpents of arable ground, it was well wooded, and it was drained by three canals. It was "perfectly equipped" with a two-story master house, kitchen, a "fine warehouse," two dovecotes, two coach-houses, a hen house, a hospital, a brick sugarhouse, cane juice boilers, a mill with a low pressure steam engine from Liverpool, a mill with a crane adapted to the steam engine, 15 negro cabins, a blacksmith shop, a carpenter shop with various utensils, and a cornmill.

The Andry Plantation with its slaves was appraised at about \$83,000 in this 1835 inventory, but when offered for sale at auction with the rest of the estate in January of 1836, the sugar plantation and stock did not bring a minimum bid. Therefore, after two family meetings to decide what to do about the minors' interests (de Armas 1836a,b:n.p.) and a professional reappraisal (de Armas 1836c:n.p.), the property was transferred to the Widow Felicite Durel Andry for the newly appraised value of \$66,600 for a two-thirds interest. Her son, Hortain Andry, retained the other one-third.

Thus, death and succession problems document the existence of a large sugar complex at the lower end of the Cutoff work area. To this, may be added the evidence of an 1834 topographic map drawn by Charles F. Zimpel (1834) illustrating the Andry Plantation with its master house, kitchen, outbuildings, and round sugar house. There were two or three rows of Negro cabins. The plantation house was set back from the river-front beyond a long, tree-lined drive.

Immediately upriver from Andry was the plantation of Agenon Bosque with its complex of buildings, and on the boundary line between the two tracts was the powder house that played a role, as mentioned above, in the Battle of New Orleans.

* A toise is an 18th century linear measure equivalent to 1.929 meters or almost 6.5 feet. As a unit of length, an arpent is equal to 58.6 meters or about 192 feet.

Above the Bosque property was the plantation of M. Fazende, and then a tract of land belonging to Casimir Locoste. Above that tract was a large plantation jointly owned by Lacoste and A. Ducros, having a large complex of houses, Negro cabins, and a short canal. These were succeeded upriver by the plantation of E. F. Fazende & Co., and then Bernoudy and Ramos. According to the Zimpel map, these were the total holdings in the Cutoff work area as of 1834. With the exception of the Andry property, they had all changed ownership since 1815, as laid forth in the Latour Atlas (Latour 1816: appendix p.V).

Hortain Andry sold to Jean Baptiste LePretre his one-third interest in the Andry Plantation on February of 1836 (de Armas 1836d:n.p.) for \$37,000. It was described at the time as being bounded above by Agenon Bosque and "à la Poudrière," the Powder House. By 1841, LePretre was able to purchase the other two-thirds interest from the Widow Andry (Seghers 1841:n.p.); the same boundaries were given, including the powder house. It was sold with all the buildings, agricultural implements, pending crop, 100 head of livestock, the steam engine, and 82 slaves, for \$85,000.

The dwelling houses, sugar house, mill, steam engine, slave quarters, out houses, carts, wagons, and animals were mentioned again in a sale of the plantation 28 years later, after the Civil War, when LePretre finally sold to Thomas P. Stanton (Grima 1869:n.p.). The plantation remained in Stanton's family until 1885 when it was lost by Stanton's heir, Charles Thompson Stanton, in a sheriff's sale to his mortgagor, Richard Milliken (Orleans Parish Conveyance Office Books 1867: Book 121, folio 410). Few plantations were immune to tax sales and sheriff sales between 1865 and 1885. The sugar crop in 1861-1862, during LePretre's ownership, measured 440 hogsheads of sugar. The crop for 1880-1881, when the plantation was owned by Thomas and Charles Stanton, produced 305 hogsheads (Anonymous 1881:80).

Richard Milliken purchased the same assortment of buildings and machinery on the old Andry-LePretre place that had been repeatedly mentioned in its land title for many decades. In 1885 it had the same 35 and one-half arpent river frontage and contained the 1822 plantation house. In 1888, however, Milliken brought in a partner, W. S. Rutledge, and the two began purchasing additional tracts of land below the original site, including the old Larche tract adjacent downriver and most of the old De La Croix Plantation (Orleans Parish Conveyance Office Books: 1888, 1894, 1899, 1900).

By 1900, the then so-called Stanton Plantation had a river frontage of seven miles that included the Cutoff Revetment study area. Some time before 1908, perhaps 1896, Richard Milliken died and his widow, Deborah Allen Farwell Milliken, took over ownership of Stanton Plantation with William A. Rutledge. According to Dixon (1971:59), Stanton Plantation was a "vast sugar empire" during the proprietorship of Mrs. Milliken and William A. Rutledge, Sr., and had five miles of railroad tracks connecting the various sections of the property. This plantation, according to Dixon, operated 100 railroad cars; the depth of the river at its "harbor" was 75 to 80 feet. "Mrs. Milliken was one of the City's most charitable

citizens and is fondly remembered for having erected the handsome Milliken Memorial in connection with the old Charity Hospital. Mr. Rutledge managed the Plantation" (Dixon 1971:59).

In 1908, Mrs. Milliken purchased the interest of W. A. Rutledge in all the tracts comprising the Stanton Plantation (Grima 1908:n.p.) and resold them in 1912 (Grima 1912:n.p.) to the Stanton Plantation and Manufacturing Company. In that single year, the assessment of the plantation dropped by 50%. By 1913, however, it was back up to its ten-year average assessment (Peters 1916a,b:n.p.).

The plantation's decline in value in 1912 may have been caused by the levee break or crevasse mentioned by Dixon: "many years ago, a levee break caused the mighty Mississippi to engulf the plantation" (Dixon 1971:59). If there was a crevasse then, it may account for the decision in 1916 of the Board of Levee Commissioners and the U.S. Army Corps of Engineers to move the levee back in front of the Stanton Plantation. Two sections of land were sold by the Stanton Planting Co. to the Levee Board in 1916 for this purpose. Two surveys, attached to the act of sale (Peters 1916a,b:n.p.), show the amount of land taken and sold from the upper portion of the plantation and from the lower portion.

The earlier plan of the upper portion indicates that the Mississippi shoreline had meandered inland quite a bit since 1875 and that the shoreline crossed the old levee in 1913, indicating a crevasse. The sugar house is indicated on this plan still safely within the new or projected levee. We know that the sugar house was upriver from the master house and slightly landward of it (Zimple 1834). Few information landmarks are provided on the survey of the sale of land on the lower portion other than the Stanton/De La Croix boundary line which is not a perfect indicator of the historic boundary line since Milliken and Rutledge had purchased portions of the De La Croix tract in the late 19th century (Orleans Parish Conveyance Office Books 1894: Book 151; 1899: Book 171).

In 1930, the Stanton Planting and Manufacturing Co. sold out completely to Russell Clark (Allen 1930:n.p.) for \$100,000 in a sale that specified inclusion of "all of Stanton Plantation" and the "Shamrock" Plantation which probably refers to the old De La Croix property, "less about eighty acres taken over by the Levee Board in 1916." There had also been a sale of timber rights to A. W. Pettigrew, Inc. in 1928 (Orleans Parish Conveyance Office Books n.d.:441) and a sale of a rear servitude to the New Orleans Sewerage and Water Board (Allen 1930:n.p.).

Other expropriations by eminent domain were in the offing for Stanton and annexed plantations. In 1932, Russell Clark released about 17 acres of the De La Croix tract to the Levee Board (Polmer 1932:n.p.). This was followed in 1942 by a more important expropriation initiated by the U.S. Navy, evidently in connection with World War II demands. In a case rendered by the United States District Court, New Orleans Division (No. 240 Misc. File) of August 25, 1942, approximately 117.84 acres of land in the lower portion of Stanton Plantation proper were condemned for eminent domain, evidently for use as a Navy Air Field. The lower end of the Cutoff study item was probably included in the air field tract.

Over 2,600 feet of frontage on the river was given up to the Navy Air Field, which appears on a "Compilation of Surveys of Stanton, Shamrock and De La Criox Plantation" made for Harvey Peltier in 1946 after he purchased what was left of the three plantations from Russell Clark in 1943 (Duke 1943:n.p.). The 1946 plan (Orleans Parish Records 1946:42) also shows that Peltier had his properties subdivided into farming strips or "groves" and into other residential plots as appear on the informal sketch included with this plan.

The ownership of the Navy Air Field was not tracked in this research and it does not appear on contemporary U.S. Geological Survey Quadrangle maps of the region. U.S. Navy records may yield further information on this tract, which may have contained certain of the Stanton Plantation houses, sugar buildings, and associated structures.

The Bosque/Couret Plantation, adjacent and upriver from the Stanton Plantation in what is presently called "The Lower Coast of Algiers," is located along the upriver section of the Cutoff Revetment work area. As mentioned above, it was inhabited close to the founding of Louisiana by Frenchmen. The U.S. schooner "Carolina" was blown up by the British on the river in front of this plantation on the 27th of December, 1814, and it was crossed by British forces in the battle on the west bank with a small skirmish there on the morning of January 8, 1815 (Dixon 1971:4, 5). In 1815, Latour delineated the Bosque/Couret Plantation as the plantation of Morin (Latour 1816: Appendix p.V).

By 1834, the plantation was owned by Agenon Bosque and contained a complex of plantation structures (Zimpel 1834). In 1831 one-half interest in a plantation of five arpents "extending to the limit of Andry" had been purchased by Gabriel Morin Fazende (Caire 1831:n.p.) from Mr. and Mrs. Louis Francois Montault of Jefferson Parish. Fazende may have been a co-owner with Bosque.

By 1867, the plantation had gained five arpents width on the river and had probably been combined with the M. Fazende property shown on the 1834 Zimpel map. It was auctioned in a civil sheriff's sale that year ordered by the 4th Judicial District Court of St. John the Baptist Parish (Orleans Parish Conveyance Office Books 1867: Book 121). The property was adjudicated at that time to Leonce Abat and Louis Florval Generes after a suit entitled "Abat, Generes, & Co. vs. Gabriel Morin Fazende" (4th Judicial District Court, St. John the Baptist Parish No. 223; Orleans Parish Conveyance Office Books 1867: Book 121). The property was described in this sale as being 10 arpents, 22 toises wide by 40 arpents deep, and bounded above by Livaudais and below by J. B. LePretre.

In 1916, George A. Generes inherited an undetermined interest in the property from the succession of Louis Florval Generes (Orleans Parish Civil District Court Records 1916:114 No. 64) and in 1917 George A. Generes made a sale of land for a right-of-way in front of the plantation to the Board of Levee Commissioners of Orleans (Peters 1916a; 1916b). On December 17, 1917, Generes ceded a right-of-way to the New Orleans Sewerage and Water Board (Orleans Parish Conveyance Office Books 1917: Book 299/163). He died in 1919.

Generes' estate was inherited by his sister, Mrs. Cecile Generes Baker, according to his will (Orleans Parish Conveyance Office Books 1919: Book 204/518), and Mrs. Baker held the property until her death in 1933. During her ownership, Mrs. Baker made two sales of land for right-of-way to the Levee Board (Orleans Parish Conveyance Office Books 1924a: Book 380/389; Book: 246; Book 388/378). Surveys were made of the expropriated property in 1924 for removal of the levee (Hennessey 1924:n.p.).

Alice J. Miller inherited the property from the succession of Mrs. Cecile Generes Baker (Orleans Parish Civil District Court Records 1933: Nos. 200-376), which included an inventory of Mrs. Baker's estate. In 1968, Alice J. Miller sold to Elkin Rubenstein (Magruder 1968:n.p.) and after he died his heirs sold to Coleman, Kuhn et al. (New Orleans Notarial Act n.d.: No. 405837). Attached to the Rubenstein heirs' sale to Coleman, Kuhn, et al., is a large-scale survey of Sections 8 and 10 of T 13S R 25E where this plantation lies. It shows the old levee line that was indicated in an 1803 map by Carlos Trudeau, City Surveyor, and shows that the levee had been set back in front of this property three times, including 1916 and in 1924-1925. Apparently, 370 feet had been lost in setback, according to this plan. A new road was built in front in 1964 (Orleans Parish Conveyance Office Books 1964).

St. Bernard Parish

Poydras Revetment

It was in St. Bernard Parish that the British in 1699 were turned back in their first attempt to colonize the Mississippi Valley, and 116 years later met their defeat at the hands of Andrew Jackson in the Battle of New Orleans (Historic Records Survey 1938:3).

Several plantations were located contiguous to the Poydras Revetment study area. Starting at the upstream border of the revetment and moving downstream, they were Story, Repose, Merits, Bank, Reunion and Poydras Hall plantations (Bragg 1977:255). Story, Repose, and Poydras Hall were among the largest plantations south of New Orleans. The largest of the three, Poydras Hall, had a sugar production of 730 hogsheads in 1861-1862 and 467 in 1878-1879 (Anonymous 1879:46).

Plaquemines Parish

Concession Levee Enlargement

Concession Levee Enlargement item is on the right bank of the Mississippi River in Plaquemines Parish. This long study area is located along the riverfront, beginning at the upstream limits of the levee enlargement, of the old Belle Chasse, St. Anne, Concession, and Concord plantations.

Belle Chasse Plantation

Belle Chasse Plantation, located within the Concession Levee enlargement right-of-way on the right bank just south of English Turn, is famous as the historic plantation of Judah P. Benjamin, a prominent jurist and U.S. senator from Louisiana during the period 1852 to 1862. Thereafter, he became attorney general and then secretary of state of the Confederacy. After the Civil War, he made a famous and harrowing escape from Louisiana to England, where he was warmly received. He died in Paris in 1884 (Anonymous 1892,II:470).

Benjamin purchased the Belle Chasse Plantation from William C. Mylie in 1844 (McCoy 1844:n.p.) and sold a half-interest in it to his sugar-making expert collaborator, Samuel Packwood, the same day. In 1853, after he had lost interest in the plantation and had been elected to Congress, Benjamin sold the other half-interest to Packwood (Guyol 1853:n.p.). Packwood's family inherited the property about 1860, when they sold to James E. Zunts (Marzureau 1861:n.p.). There followed a contestation among the heirs of Packwood and Zunts over certain rights to the property (Orleans Parish Civil District Court Records 1860: No. 15, 253) and in 1865 by an "Act of Settlement of Suit, Partition and Partial Proceeds of Sale," the heirs of Samuel Packwood and James E. Zunts sold Belle Chasse to William and Haywood Stackhouse (Madden 1865:n.p.).

Belle Chasse Plantation was then considered 5.5 leagues below New Orleans and stretched 57.5 arpents along the river. Included in the sale were buildings, machinery, agricultural implements, and "everything pertaining to the sugar house." After Haywood Stackhouse died, his heirs sold out their interest to William Stackhouse, including in general the same items (Hero 1872:n.p.). There followed another bitter legal contest over mortgages, succession interests, and other contentions between James E. Zunts and William and Haywood Stackhouse, although Haywood was deceased (Plaquemines Parish Judicial District Court Records 1874).

This battle eventually caused the property to be put up for public auction in 1874 which was advertised in the newspaper amid a flurry of legal acts, estate inventories and family meetings. The matter eventually went to the Louisiana Supreme Court where a printed brief of 21 pages was presented to the court.

Eventually the property became the project of the Benjamin Memorial Association which had good intentions of restoring it, but according to Meyer (1981:59) they sold it "when they had allowed it to deteriorate beyond repair." The Belle Chasse mansion evidently still stood in 1939 when it was mentioned as among the fine plantations remaining in Plaquemines by the WPA Historic Records Survey (Historic Records Survey 1939:7). The Plaquemines Commission Council placed the Belle Chasse Plantation bell on a pedestal after the mansion burned "to mark the center of Benjamin's Belle Chasse and as a shrine to his memory" (Meyer 1981:59).

An important early road ran through the center of Belle Chasse Plantation and existed throughout the 19th century until at least 1912, leading from English Turn to a point near New Orlenias, over which goods

were transported after being unloaded from ships unwilling or unable to negotiate English Turn under sail in expedient time (Daniel 1912). It is known as the "Cutoff Road" and a portion of it lies along the present Louisiana Highway 23. In 1939, the Works Progress Administration Historic Records Survey described the town of Belle Chasse as a "thriving rural community with a new combination auditorium and gymnasium built by the Works Progress Administration, located on the campus of the Belle Chasse High School and near the Judah P. Benjamin home" (Historic Records Survey 1939:11).

St. Anne Plantation

St. Anne Plantation, in 1873-1874, embraced 24 arpents of river front and contained at least one building complex (U.S. Coast Survey 1879:Sheet 6). It was located adjacent to the lower limit of the Belle Chasse Plantation, and above the Concession Plantation. St. Anne Plantation is cited by Meyer (1981:60) as the old La Seppes place. Juan de Egana, a wealthy sugar planter from Mexico, owned it from 1853 to 1859 (Champomier 1859:20-21). In 1859, after several good years, sugar production declined. St. Anne, like its neighbors on the upper west bank of Plaquemines, became inundated (Champomier 1859:20-21). In 1842, St. Anne Plantation was evidently owned by Durel, who was mentioned as the upriver neighbor of the Concession Plantation (Caire 1843:n.p.).

From at least 1873-1884, St. Anne Plantation had a master house, six other buildings, and about 28 Negro cabins (U.S. Coast and Geodetic Survey 1879:Sheet 6; U.S. Coast and Geodetic Survey 1884); however, by 1893, little remained on the property but three rows of Negro cabins (Mississippi River Commission 1893: Chart 77).

Concession Plantation

Concession was an historically famous plantation in the Plaquemines District as early as the 1720s when it was deeded to Le Blond de La Tour, French military engineer of the King, who assigned his brother, Joseph, to manage it. Its lands border the lower end of the Concession Levee enlargement. According to historian Samuel Wilson, Jr., Le Blond de La Tour submitted much correspondence concerning the property to the French government. This correspondence is now held by the Archives Nationales in Paris. Concession was called "the Great Choachas Plantation" and was delineated by mapmaker and artist Dumont de Montigny during the 1720s or 1730s on a map in the possession of Mr. Samuel Wilson (personal communication). This map shows 23 different buildings as part of the "Concession des Choachas," named for the Choachas Indians who inhabited both banks of Plaquemines during the early days of Louisiana settlement. In 1738, according to Mr. Wilson, Le Blond de La Tour sold the property to Sieurs Dannoy and D'Assaily (Wilson, personal communication).

Concession Plantation had been divided during the middle of the 19th century and consisted of 35 arpents fronting the river when it was inventoried in the estate of David Urquhard, a native of Scotland (Plaquemines Parish Inventory Books and Probate Books 1842). Urquhart

willed Concession to his wife Mary Gayoso Williams, and his sons Robert and James (Caire 1843:n.p.). Along with Concession, Urquhart had owned several New Orleans town houses and stores, and another country home, but Concession was his principal sugar estate. Champomier lists Robert D. Urquhart as the owner of Concession in 1853-1854, with no sugar production, because it was "mostly overflowed" (1854:22-23).

During the years 1855-1856, however, Robert Urquhart had a production of 630 hogsheads (Champomier 1856:20-21). In 1858-1859, James E. Zunts, who also owned nearby Belle Chasse Plantation, is cited as the owner of Concession Plantation (Champomier 1859:20-21). From 1873 through 1884, Concession Plantation incorporated a master house, a very large complex of outbuildings, and a sugar house (U.S. Coast and Geodetic Survey 1879:Sheet 6; U.S. Coast and Geodetic Survey 1884). In 1893, Concession Plantation was owned by George P. Anderton. At that time only nine Negro cabins and four other structures were extant (Mississippi River Commission 1893:Chart 78).

Concord Plantation

Concord Plantation was located immediately downriver from the Concession Plantation. In size, it measured 18 arpents along the Mississippi River (U.S. Coast and Geodetic Survey 1879:Sheet 6).

Champomier lists Concord Plantation as being owned in 1851-1852 by Mrs. Hughes Lavergne and Felix Villere. Huges Lavergne was a member of one of Louisiana's oldest and most prominent families. He inherited Concord Plantation from his parents. Lavergne was educated at the law offices of Charles Derbigny, president of the Louisiana State Senate. Among Lavergne's many accomplishments was the founding of the Lafourche Canal Company, and his election to the state senate as the candidate of the "Native America" or "Know Nothing" party. During the Civil War, he left the plantation for the Confederate cause and returned to face ruin after the war. Lavergne died in New Orleans in 1887 (Arthur and Kernion 1931:64).

According to Seebold (1941:(1)71), the Concord Plantation house was raised raised on piers, and was characterized by surrounding galleries supported by colonnettes, a shingle roof, brick chimneys, and dormers. By 1893, Concord had been renamed Lilly and its ownership had been transferred to B. Cousins (Mississippi River Commission 1893:Chart 78).

The year 1890 brought to Louisiana the highest water New Orleans had seen until then (Anonymous 1892,II:13-36). Concord, Concession, and St. Anne plantations may have been inundated that year or in the next high water year, 1892, thus accounting for the startling changes on the Mississippi River Commission charts of 1893. There was also a devastating hurricane in 1893 that swept across Plaquemines Parish (Historic Records Survey 1939:12), no doubt compounding the high water problems of the decade.

Scarsdale Revetment

Scarsdale Revetment, located along the left bank of the Mississippi River in Plaquemines Parish, lies along the former Stella Plantation, also known as Catherine Plantation. The Stella Plantation house is still standing, though in a greatly altered condition (Labouisse 1979). It is not located in the construction right-of-way. Stella Plantation is situated between the old Scarsdale and Mary plantations. In the early 18th century, the land was held as one of three habitations of "the Carrieres Freres" as seen in Plate 3 (Anonymous circa 1723).

During the first half of the 19th century, Catherine Plantation belonged to Alexander Grant, Sr. (Champomier 1851-1856:22). By 1869 it was the property of his estate (Bouchereau 1869:24-25). Its complex of buildings, probably included a large sugar house (U.S. Coast Survey 1879).

William Horner purchased Stella Plantation, the former Catherine Plantation, from Simpson Horner (Plaquemines Parish Conveyance Office Books n.d.:Book 29/1055) who had purchased it from the New Orleans Sugar Company for \$48,000 in 1878. The sale included machinery and equipment (Hero 1878:n.p.).

In 1895, William G. Horner sold out to a consortium for \$25,000 (Grima 1895:n.p.). Included in the sale were the same machinery and sugar apparatus as had been mentioned in 1878, and "all the sugar on the floor of the sugar house" which was determined to be 16,000 pounds.

L. Saxon and James B. Sinnot became the owners in 1907 (Saxon 1907:n.p.). The following year, the two sold it to the Stella Planting and Manufacturing Company (Saxon 1908:n.p.) for \$75,000. At that time, the plantation still had machinery, steam mills, and sugar apparatus.

In 1913 a sheriff sale ordered by the 29th Judicial District Court (Plaquemines Parish Judicial District Court Records 1913:No. 1062) resulted in the transfer of its title to "Stella Planting Company" (Plaquemines Parish Conveyance Office Books 1913:Book 48/529). Stella Planting Company, represented by William T. Hardie, sold the property to Henry Mestayer and Charles DiCarolo for \$30,000 in 1923 (Hart 1923:n.p.) with tools, carts, wagons, and buildings. In 1924, the buyers were Oliver S. Livaudais, Alfred O. Hero, Walter Castanedo, and William H. Hodges, who probably wanted to establish a duck hunting club there. A plan of Stella was made by Gilbert & Kelly Surveyors (Hart 1924:n.p.) for this sale. The duck club was located at the rear of the property.

Stella went through another sheriff sale during the 1930s and eventually became part of Stella Lands, Inc., controlled by Chalin O. Perez, present president of the Plaquemines Parish Policy Jury and son of Leander Perez, the political leader of Plaquemines from the 1920s until his death in the 1970s. Chalin Perez and his family have been living at Stella. There is an oil field on the site (Tobin 1953).

Live Oak Levee Enlargement

Live Oak Levee Enlargement is on the right bank of the Mississippi River in Plaquemines Parish. This long stretch of riverfront includes, from the upstream limits of the study area downstream, the former plantations of Oak Point; New Hope; Cedar Grove, also known as Augusta; the town of Oakville; the former plantation Idlewild; Sarah Plantation; Live Oak Grove Plantation; and the community of Jesuit Bend. Two later communities, Ollie and Gloria, are located below Jesuit Bend in the work area. In earlier times, there had been a plantation named Union at the approximate location of these last-named communities.

Oak Point, owned by B. Cousins in 1893, included among its structures a master house, twelve worker's cabins, and nine other buildings (Mississippi River Commission 1893:Chart 77). Cousins may have combined the former plantation of Augusta and Octave Reggio mentioned in Champomier (1854:22-23; 1859:20-21) and formerly listed as being the property of A. Knox from 1851 to 1856 and of W. and H. Stackhouse from 1858 to 1859. Oak Point was evidently a smaller plantation in 1884, measuring six arpents (U.S.Coast and Geodetic Survey 1884).

Cedar Grove Plantation is delineated as a tract of 22 arpents frontage on the river with a complex of buildings (U.S.Coast and Geodetic Survey 1884). In 1893, a landmark, "Cedar" had replaced the plantation name (Mississippi River Commission 1893:Chart 77).

Below Oak Point, and Cedar Grove plantations and above Idlewild and Sarah plantations was the small settlement of Oak Point (Mississippi River Commission 1893:Chart 77; U.S. Coast and Geodetic Survey 1884). In 1893, several small landowners in that area included Mrs. D. Arnolie, Mrs. A. Jeoffrey, P. Crouere, and H. Mahoney (Mississippi River Commission 1893:Chart 77). There were evidently 71 small houses there in that year.

Idlewild Plantation is delineated in 1893 with four more structures (Mississippi River Commission 1893:Chart 78). It was located between the Oakville and Sarah plantations and measured approximately ten arpents wide.

Sarah Plantation, between Oakville and Live Oak Grove Plantation, is listed by Champomier as being owned by William M. Pincard between 1851 and 1854 and by George M. Pincard the next year (1855:20-21). Sarah Plantation incorporated a master house and complex of dependencies (Mississippi River Commission 1893:Chart 78; U.S. Coast and Geodetic Survey 1884). There was not, however, a large complex of houses. The main house may have been only a manager's house or the sugar house. According to one source (Anonymous 1892,I:454), the Sarah Plantation was owned in 1892 by Joseph P. Gueno and had 1,700 acres of land with a large sugar house.

Live Oak Grove Plantation appears as a plantation complex of about 23 arpents frontage having a master house, outbuildings, and a row of cabins (U.S.Coast and Geodetic Survey 1884). In 1893, it is shown as having 14 dependencies owned by Dr. C. P. Wilkinson (Mississippi River Commission 1893:Chart 78). Live Oak Grove Plantation was managed in 1892 by Jesse W.

Ross who also managed three other Plaquemines plantations with his father-in-law, William Stackhouse (Anonymous 1892,II:355). Champomier lists the famous Creole, Bernard Marigny, as the owner of Live Oak Grove from 1851 to 1854, when William Stackhouse apparently bought it. They produced 1,302 hogsheads of sugar with a vacuum pan process in 1854-1855; and 1,000 hogsheads in 1855-1856 (Champomier 1855:22-23; 1856:20-21).

Jesuit Bend was, according to Meyer (1981:60), so named because the Jesuits located there. In 1914, it was described as a village with a railroad station and "a money order post office and telegraph station, located in a rich orange and truck farming district" (Fortier 1914,I:586). In 1893, the Barrios brothers were located there, and so were the farms of Mathew Paolin, Benjamine Field, John Halceran and Mrs. Dobard (Mississippi River Commission 1893:Chart 78). Below Jesuit Bend Champomier (1851-1859) identified Union Plantation owned by B. Bayhi and son. The modern settlements of Ollie and Gloria are not described by the 1914 Century Historical Association publication on Louisiana (Fortier 1914), which purports to list all the hamlets of the state.

Alliance Revetment

Plantations located along the Alliance Revetment, moving downstream included Happy Point, Star, Reussite, Alliance and St. Rosalie. St. Rosalie is noteworthy as being owned by A. Durnford, a "free man of color" (St. Rosalie Plantation Record Book 1840-1868:microform; Sitterson 1953:148).

Point Michel Revetment

Point Michel Revetment is located on the right bank of the Mississippi River in Plaquemines Parish. This stretch of land was known in the middle of the 19th century as Quartier Barthelemy, a French term for the intra-family neighborhood-type of settlements forming communities in Plaquemines at the time. The Barthelemy family was allied with the Rigaud, St. Ann, Encalada, Chighizola, Coulon, Encar and other families, most of whom were free persons of color and second or third generation descendants of the founding families of Grand Isle, Louisiana (Evans et al. 1979:23-71).

Grand Isle has been exploited by large sugar planters beginning in the 1840s and larger tracts of the limited land there had been assembled for large-scale agricultural uses by New Orleanians (Evans et al. 1979:23-71). The poorer native families may have moved to lower Plaquemines at that time in search of available land. Plaquemines Courthouse records by the hundreds from the middle 1850s until the present day reflect property transactions, successions, wills, and marriage contracts among these family members.

In 1871, the Point Michel area was inhabited by, among others, J. Ancar, Joseph St. Ann, Valentine Encalade, Edgar Rigaud, J. Encalade, Mrs. Chighizola and Mrs. C. Rigaud, and R. Barthelemy (Mississippi River Commission 1893:Chart 81). The other major families at the time were Lightel, A. B. Hays, and F. Williams. At the immediate upriver boundary of Point Michel was the large rice plantation of Angelo Socola, a well-

educated Italian businessman who migrated to America in 1849 from San Remo, Italy, and became the foremost pioneer in rice production and improvement in Louisiana (Anonymous 1892,II:397-398).

Socola and a Dr. Story, who raised rice in the Point Michel section, were probably among the only landowners in the area who could be considered from upper economic groups in the late 1800s. According to a map showing landowners in the Point Michel work area (Tobin 1953), the section was still inhabited by the Hays, Barthelemy, Encalade, Encar, and Rigaud families in the middle of the 20th century. Other families living there at that time included Douglas, Morel, Foster, Slater, Chauvin, Dinet, and Zulime Le Bon Codina.

Happy Jack, a small village in the middle of the work area, was considered a postal stop town in 1914, when it was described as being in a district of orange groves doing "considerable business" (Fortier 1914, I:491). Encalade, a hamlet below Happy Jack, is named after the family of that name.

Port Sulphur Revetment

Port Sulphur Revetment area is on the right bank of the Mississippi River. Nairn, a large plantation during the 19th century is located in the downriver portion of the work area.

This stretch of river above Sixty Mile Point was known as "Little Texas" in the 19th century and was composed of Little Texas Plantation and a series of small farms where rice was grown (U.S. Coast and Geodetic Survey 1884). In 1893, the following small landowners inhabited this section: F. Michael, Luke Scobel, A. Lassus, L. Luchinovick, A. Chartier and E. Bremmond (Mississippi River Commission 1893:Chart 79). Downriver were the small landholdings of J. Ballay, P. Domund, F. Domund, Mrs. P. Lyons, J. Hingle, Mrs. Blackmant, J. Sordolet, J. Hingle, J. Ballay, M. Rock and E. Lassus (Mississippi River Commission 1893:Chart 79). These small landholdings were enclosed along a narrow strip of arable land by cottonwood, cypress, willows and palmetto swamps. Dr. Hays, another resident, owned a larger tract below that of a Mr. Guyol. Adjacent to Dr. Hays was a large property with small houses owned by Gradish Johnson (Mississippi River Commission 1893:Chart 79).

This area was developed by Freeport Sulphur Company in the 20th century. According to Works Progress Administration, "Development of the sulphur industry on the Lake Washington Dome began in 1932.... At Home Place, located above the work area, the Freeport Sulphur Company has build a \$6,000,000 city for the development of the parish's sulphur deposits" (Historic Records Survey 1939:10).

Bayou Lamoque Revetment

This east bank, on which Bayou Lamoque is located, was sparsely populated in comparison to the west bank of Plaquemines Parish with its relatively large plantations. In the post-Civil War period, the most prevalent economic occupations were fishing and oystering and the growing

of citrus fruits and vegetables. Mineral exploitation superseded these activities following the discovery of the sulphur, natural gas and oil which has greatly altered the cultural, demographic, and economic character of the region (Davis et al. 1979:92).

Located across from Bayou Lamoque Revetment on the right bank area was the Nairn Plantation, established in the late 1840s and named in 1855. This plantation probably inspired the name of the modern community of Nairn (Davis et al. 1979:84). Alexander Grant owned the plantation before the Civil War, followed by Lee and Bartell sometime before 1871. After that date, it became the property of T. S. Barbour who renamed the area Mayflower Plantation (Davis et al. 1979:84).

Tropical Bend Revetment

Tropical Bend Revetment is on the right bank of the Mississippi, north of Empire. This area was owned during the 1850s by the following: the Joseph Hingle estate, William Christian, William Titterman, Milton Rigaud, Albert Johnson, Henry Kness, V.K. Buras and partners, Mrs. Frances Kamlah, William Serpas, the John Juka estate, the Bowers family, the William H. Foster estate, and Ben Stockfleth (Tobin 1952). The Stockfleth, Bowers, Foster, Hingle, Serpas and Rigaud families had been settled in this region since the middle of the 19th century according to Plaquemines Parish Conveyance Office Books dating between 1850 and 1950. This section was the upper portion of a small community known as Buras (U.S. Geological Survey 1892), which was the southern terminus of the New Orleans, Fort Jackson, and Grand Isle Railroad. In 1914, Buras contained a population of 500 (Fortier 1914,I:134). The Buras family had been settled in this region since as early as 1834.

The land adjacent to the Tropical Bend Revetment study area was held, in 1871, by the following landowners: M. Popvich, Green Metcalf, N. Buras, John Johnson, William Merrick, J. B. Bowers, C. Hingle, H. Kemlah, A. Williams, R. Bulot, J. Stockfleth, and Dr. E. Rabasse (Mississippi River Commission 1871:Chart 81). Of these, the larger tracts were those of Green Metcalf, John Johnson, and J. B. Bowers. The latter individual also owned a canal named Bowers Canal and, along with four other canals, it led to Adams Bay behind Tropical Bend. Adams Bay is much larger today, due to 20th century marsh subsidence.

A tract, contiguous to the Tropical Bend Revetment, was owned by the Foster family from 1922 until after 1957 (Plaquemines Parish Conveyance Office Books 1922, 1942a, 1957). It was acquired by the C. B. Foster Packing Company in 1922. The company operated "packing houses or cannery for use of parties bringing oysters or shrimp" (Plaquemines Parish Conveyance Office Books 1925). C. B. Foster purchased the property from John Bowers, Sr. (Plaquemines Parish Conveyance Office Books 1922) who had owned it since 1876 (Plaquemines Parish Conveyance Office Books 1876). Prior to that time, it had been owned for a short period by the City of New Orleans, which purchased a portion of ground in 1866 from Radish Johnson and Effingham Lawrence (Castell 1866:n.p.), two important Plaquemines sugar planters.

Tropical Bend was developed into small tracts of land of as little as one arpent wide during the 19th century and was settled by small landowners prior to the 1830s, and occasionally held in part by larger landowners who did not make it their principal habitation.

CHAPTER IV

PROJECT METHODOLOGY AND FIELD CONDITIONS

Research Objectives

The primary objectives of this study were to locate and inventory the cultural resources within the areas that may be affected by the proposed construction activities, to evaluate the identified resources with respect to their eligibility for inclusion in the National Register of Historic Places, and to make recommendations for further investigations or mitigation of adverse project impacts on resources assessed as potentially eligible for nomination to the National Register of Historic Places.

To adequately interpret these resources, it was necessary to determine the general geomorphological history of the study area with an emphasis on the specific fluvial process likely to have affected each individual survey item, and to describe a regional prehistoric and historic framework for the study areas. In Chapters 2 and 3, these subjects have been addressed.

In previous Mississippi River survey reports, Iroquois Research Institute (1980b, 1980c), also described the influences of cultural, fluvial, and geomorphological processes upon cultural resources located in the batture along the Mississippi River. With the completion of this study the Institute has surveyed a total of more than 88 kilometers (55 miles) of the Mississippi River. Seventy-seven percent of this total was performed for Work Packet 5, the subject of this report.

This relatively large sample permits an analysis of the site types and land use within lower Mississippi River batture zones and an evaluation of the effectiveness of intensive batture surveys. The results of this analysis, to be presented in Chapter 7, will take into account geomorphological processes, environmental factors, and methodology. These conclusions will form the most important secondary result emanating from this performance and will hopefully aid in future government planning.

Survey Expectations

Prior to the pedestrian archeological survey of the Work Packet 5 items, Iroquois Research Institute developed a set of working hypotheses that guided the field methodology and outlined the expected results of the survey. To derive these expectations, three types of information were taken into account: the results of previous studies by Iroquois Research

Institute and other cultural resources studies, historic background research gathered for previous studies and for Work Packet 5, and the role of geomorphology in exposing, destroying or preserving archeological sites. These working hypotheses are as follows:

1. Prehistoric sites would be very rare, being exposed only in erosional cutbanks or where old land surfaces may have been exposed by human earthmoving activities. Due to the high rate of overbank sedimentary deposition, erosion, and subsidence, the probability of finding prehistoric sites in the batture would be very low. This has been pointed out in Chapter 2 of this report as well as in previous Iroquois Mississippi River batture surveys (Iroquois Research Institute 1980b, 1980c). Davis (1977:18-19; Davis et al. 1979:21) has noted the same for other areas of the Mississippi River batture in Plaquemines Parish. Prehistoric sites would have the greatest probability of being found in erosional cutbanks or where old land surfaces have been exposed by human activities.

2. The most common non-in situ cultural remains would consist of modern flotsam and jetsam and human deposited garbage. Previous surveys by Iroquois Research Institute (1980b, 1980c) determined that the most common form of cultural evidence occurring within the batture was a continuous bankside scatter of driftwood, metal and plastic garbage, old navigation buoys, and wooden pier and mooring tower fragments. These had been cast on shore by river action, predominantly during flood stage. Along the levee side edge of the batture forest, a similar deposit of modern garbage, construction debris, and bulldozed tree piles was often evident. These deposits were the result of dumping and clearing activities along the riverside toe of the levee.

3. In situ cultural resources would be most commonly characterized by structures related to modern nautical, industrial, and flood and erosion control activities. Least common would be structures associated with cattle and horse raising. Because of the constant threat of erosion and flooding, the river's edge is a precarious and dynamic environment. Permanent structures, unless related to nautical or industrial activities, are rarely constructed along the river's edge. Shipping and navigation structures observed along the river in previous cultural resources studies included docks, shipyards, and navigation light supports (Iroquois Research Institute 1980b, 1980c). Industrial structures were usually related to river access. Most common were loading docks and platforms. Archeological remains of a possible industrial structure were, for example, discovered during a previous Iroquois batture survey (Iroquois Research Institute 1980b:88).

In addition to nautical and industrial facilities, the third most common class of in situ cultural remains would consist of erosion and flood control structures such as revetments and retaining walls. Most often these were constructed of concrete or limestone rip-rap laid along the river's edge or the riverside of the levee. Plate 4 depicts the remains of a concrete revetment. Wooden retaining walls or revetments were least common, so much so that a wooden retaining wall was given a site designation in an earlier Iroquois batture survey report (Iroquois

Research Institute 1980b:78). The most ubiquitous evidence of flood and erosion control activities within the batture were numerous borrow pits created by the construction of earthen levees.

Grazing areas have been occasionally noted within the batture (Iroquois Research Institute 1980b:66). Although associated structures were not observed, it is possible that wooden corrals and run-in sheds might exist elsewhere. Where animal grazing is evident one could expect to find such structures.



Plate 4. The remains of former concrete revetments are very common along the Mississippi River. This one is located along the Alliance Revetment item. No. 1507-14

4. Survey items contiguous to former large plantations and landholdings would tend to have a higher probability of containing bankside cultural resources than in areas where small land holdings were in the majority. Direct historic data on land use within the batture is very difficult to locate. Historic research prior to Iroquois' archeological surveys has yet to pinpoint specific structures or other cultural resources occurring within batture survey items. Furthermore, documents rarely treat those activities that occur just on the river's edge. Riverside activities must be inferred from the general descriptions of landholdings contiguous to the survey items.

It would be expected that most structures along the river bank would be related to river access, water acquisition and, to a lesser extent, fishing. Larger plantations, because of their greater economic output, would hypothetically, tend to have a greater need for river access than small farms or plantations. It is known, for example, that most large plantations usually possessed steamboat landings (Iroquois Research Institute 1980a:63). The remnants of such structures, if erosion had not destroyed them, might occur as wooden dock remains or pilings. Small plantations or landholdings may not be associated with riverside structures. It would, therefore, be more probable that cultural remains within the batture be found where large plantations and landholdings were present.

5. Areas subjected to erosion would contain cultural resources unrelated to the riverside or nautical activities. Depositional zones would tend to be archeologically sterile. The role of geomorphological processes must also be considered. In areas of extreme erosion, the river is continuously encroaching upon standing structures as well as upon archeological remains that were once situated inland from the river. It is likely, therefore, that archeological resources found within batture erosional zones, having been previously located inland, may be unrelated to nautical activities or to river access. Given that large former plantations were usually characterized by many buildings and, in some instances, extensive sugar processing facilities, it may be hypothesized that there would be a greater probability of finding archeological remains in parts of the batture that once belonged to these large landholdings.

Conversely, areas of extensive deposition and shoreline prolongation may be too recent to have had any cultural activities take place upon them. They would appear sterile on the surface.

To predict the nature of bankside archeological remains, several parallel lines of research must be pursued. Geomorphological evidence must be gathered to determine the location of past shorelines and the rate of erosion or deposition within the study area. Historic data from cartographic and archival sources must be analysed to determine the period and nature of activities and structures both along the river and inland of the study area. Once these data are synthesized it may be possible to predict whether historic archeological remains of a particular age discovered within the batture will be related to riverine or nautical or to agricultural or domestic activities. Care must be taken to determine from archival sources or from local oral accounts if certain bankside structures had, in the past, been relocated inland as erosion threatened. These structures or their remains might conform to riparian functional categories rather than with the non-riverine functions predicted for remains in areas of intense erosion. The accuracy of the predictions will depend upon the quality of the available geomorphological and historic data.

Field Survey Conditions

The Mississippi River batture in southern Louisiana presents a number of unusual field conditions that affect the procedures of an

intensive archeological survey. Seasonal flooding, vegetation, construction, and commercial activities affected both the conduct of the survey and the ease or difficulty with which archeological sites could be distinguished.

Perhaps the most significant factor affecting the cultural resources and survey conditions was the Mississippi River. Depending upon the location of each item, cultural remains are either being destroyed by erosion or buried under point bar deposits. The effects of geomorphological factors upon the survey items of Work Packet 5 have been described in Chapter 2.

Seasonal flooding significantly affects the kinds of cultural remains observed in the batture by depositing a wide variety of cultural materials. In several survey areas, particularly near population centers, the river bank was littered with an almost continuous scatter of river deposited trash. Some of it is clearly of 19th century derivation, but in this context it was intermixed with recent trash. The effect upon site definition caused by these deposits is discussed in a following subsection of this report.

Perhaps the most significant factor affecting the pedestrian survey was vegetation conditions. Shelford's (1936:96) description of vegetation within the mature batture forest accurately depicts its effect upon the surveyor:

The trumpet-vine comes in with the cottonwood and willow on the ridges and persists at least up to the sugarberry stage. Poison ivy is frequently more abundant in the willows of the flats than elsewhere. It appears in the succession before the grape. Grape becomes abundant on the ridges. In some areas, pepper-vine takes the place of trumpet-vine. The trumpet-vine, poison ivy, grape, pepper-vine, honeyvine, sometimes buckwheat vine, and morning-glory make a tangled mass so dense and binding as to make passage very difficult except along trails.

Within the batture forest these conditions were exacerbated by the presence of fallen trees and large amounts of vine-covered driftwood and other river deposited debris. Plate 5 illustrates the general conditions often encountered within the batture. Conditions improved outside the batture forest, particularly along sandy river banks where willow thickets and herbaceous plants were sparse or absent. Detailed descriptions of vegetation are presented in Chapter 2.

Visibility was often poor in the batture forest, usually less than five percent, and limited to the thin strip of ground cleared by the archeologist as he or she walked through the dense vegetation. In less disturbed, higher areas, such as in the Rich Bend Revetment, the upstream end of the Luling Revetment, and the Poydras Revetment, species such as hackberry, pecan, sycamore, ash, elm, live oak, and water oak were more



Plate 5. Typical vegetation conditions within the batture forest. This photograph was taken along the Alliance Revetment item. No. 1575-2.

abundant. Undergrowth in these areas was less dense but still thick enough to severely limit surface visibility. An example of Rich Bend vegetation is illustrated in Plate 6.

Two other exceptions to the general vegetation pattern were noted. In the downstream area of the Bayou Lamoque Revetment item, a clear pasture, illustrated in Plate 7, stretched from the river to the landward limit of the project right-of-way. Surface visibility ranged between zero and 25 percent. At the Manchac Revetment item, undergrowth within the batture forest was not as dense as it was in most other survey items due to the presence of grazing cattle. Although the vegetation disturbance caused by grazing and movement of cattle had increased lateral visibility within the forest, it did not improve the characteristic poor surface visibility.



Plate 6. At Rich Bend, the vegetation was more mature than at most revetment items. Parallel tree lines within the batture forest, between the old and new levees, as illustrated in this photograph, is evidence of a field edge and road that existed prior to a recent levee setback. No 1562-17A.



Plate 7. Pasture conditions along the downstream segment of Bayou Lamoque. The Mississippi River can be seen in the background. No. 1579-13.

Previous land disturbance was evidenced in all of the Work Packet 5 items. Borrow pits, resulting from levee construction, as well as earlier levees, were present in most areas, attesting to past construction activities. These features were among the most prominent affecting survey coverage. They were usually visible in the project maps supplied to Iroquois Research Institute by the Government. Most often these borrow pits paralleled the levee just inside the batture forest. When filled with water, as in Plate 8, they were not surveyed.



Plate 8. A water-filled borrow pit at the Tropical Bend Revetment item during the end of May. Flooding at this time of year has created an outlet from the borrow to the Mississippi River. No 1574-14.

Ongoing land modification was noted in two of the survey items. Within the upstream section of the Luling Revetment, earth-moving by bulldozers and excavating by backhoes were observed. The area was surveyed and excavation profiles inspected by the archeologists. In the central section of the Poydras Revetment item, the batture forest was being bulldozed upstream and downstream of a mooring tower construction facility. Areas around the facility were surveyed.

Additional evidence of past disturbance can be inferred from the presence of modern structures and river facilities within several of the survey items. At the Concession Levee Enlargement item, a Chevron oil

refinery loading facility was present within the midstream section of the survey area. The batture at the rear of the refinery was enclosed by a locked fence and was not surveyed. Also present within the Concession item was a coal-loading facility, a tow boat dry dock, and the Belle Chasse Ferry. Whenever possible, the areas around these facilities were surveyed.

At the Alliance Revetment item, the Gulf Alliance Refinery coke conveyor as well as a grain elevator loading facility were present within the project right-of-way. Survey transects were not run through these areas due to the presence of heavy machinery and obvious land disturbance. Similarly, the industrial complex within the upstream section of the Port Sulphur item was not surveyed.

The Pedestrian Survey

Iroquois classifies the archeological survey carried out in Work Packet 5 as a systematic pedestrian transect survey. Archeological survey crews ranged in size from four to thirteen individuals depending upon logistical considerations in the field. A maximum of two crews were surveying different items at any time. Other field personnel included historians, architectural historians, and a soil scientist.

Each survey item was identified in the field by comparing existing levee station markers with station information presented on project maps supplied by the Corps of Engineers. At items where station markers were not present, item boundaries were identified in aerial photos relative to visible structures, roads, or other features.

Survey transects in this study were defined as the parallel straight paths traversed by each archeologist across each item. Transects, spaced at 35-meter intervals, were oriented according to the distance between the levee and the river, and the density of vegetation in each survey area. In narrow, cleared or slightly wooded project rights-of way, survey transects were walked parallel with the levee and river. Given that walking was relatively easy in these areas, surveying parallel transects was the most efficient means of coverage.

In wide, densely vegetated items, transects were oriented perpendicular to the levee and river. Because perpendicular transects were shorter, they were more accurately paced, thereby allowing easier locational control than for long transects for which accurate headings were more difficult to maintain. Visual contact between archeologists on short transects was also maximized, thus increasing the safety factor in heavily vegetated areas. At all the survey items, with the exception of Alliance, Port Sulphur, and Bayou Lamoque, a combination of both parallel and perpendicularly aligned transects were utilized. At the above mentioned exceptions, only perpendicular transects were surveyed.

Each archeologist noted the presence of, and inspected, cultural debris, archeological sites, artificial surficial anomalies and exposed banks along and to either side of his or her transect. Notes were made on standard field forms and in field notebooks.

Subsurface Testing

The subsurface testing procedure consisted of the placement of 30-by-30-by-30 centimeter shovel tests and 3-inch diameter auger borings in selected locations. As discussed in Chapter 2, many of the areas within the project rights-of-way evidenced severe prior land modification. Iroquois Research Institute, therefore, limited subsurface testing to zones judged by the archeologists and geomorphologists as possessing a higher probability of yielding in situ buried cultural remains. These zones were identified on the basis of geomorphology, relief, and vegetation.

Geomorphological processes were the most important factor in determining the probability of finding subsurface sites along the Mississippi River. Areas of high silt deposition rates were judged to possess the best potential for in situ preservation of cultural remains by burying, but have the least potential for discovering any but the most recent archeological sites. This paradox is due to the fact that contemporary cycles of deposition have been creating new land forms that have had little cultural activity upon them.

Areas of high erosion have the least potential for in situ preservation of cultural remains but the best potential for revealing buried archeological sites. In such situations, older previously inhabited land surfaces, buried by past episodes of riverine deposition, are now being newly exposed by erosion.

The 14 survey items in Work Packet 5 have been listed in Table 4 according to the dominant fluvial process, erosion or deposition, occurring at that location. These data are based upon geomorphological analysis of meander patterns along the survey items and verified by comparing shoreline movement between 19th and 20th century maps. Those areas subject to high silt deposition and, therefore in situ preservation of cultural remains, are located on the inside of right-hand meanders on right descending banks, and on the inside of left-hand meanders on left descending banks. Deposition may also occur on straight reaches between gentle or large radius meanders. Erosion and, therefore, exposure and subsequent destruction of cultural remains is most rapid on the outside of meander bends or on straight reaches just downstream of sharp meanders.

To compare the value of subsurface testing in erosional versus depositional zones, a sample of both was tested using shovel tests and auger borings. The placement of subsurface tests within each depositional or erosional area was based upon variations in elevation and vegetation within each survey item. Prime testing locations were considered to be elevated areas showing no evidence of severe flooding or soil borrowing; and zones vegetated by mature groves of trees other than willows. Plate 9 illustrates a typical auger boring location. The presence of older, flood intolerant trees such as elm and live oak are indicative of less recent land disturbance than in areas where willow or cottonwood trees are dominant. Such locations have a greater probability of revealing undisturbed cultural material.

TABLE 4

Dominant Fluvial Processes, Distribution of Testing and
Discovered Sites in Work Packet 5 Survey Items

<u>Erosion</u>	<u>Discovered Sites</u>
Manchac upstream - Tested	
Luling downstream	16SC47
Rich Bend upstream - Tested	16SJ32, 16SJ33
Concession upstream - Tested	
Poydras - Tested	16SB104, WP5-7.
	16SB105, 16SB106
Alliance upstream - Tested	16PL85, WP5-5
Cutoff - Tested	16OR68
Live Oak downstream - Tested	16PL86
Point Michel upstream and downstream ends	
Port Sulphur upstream and downstream - Tested	
Tropical Bend	
Scarsdale upstream	
<u>Severe Erosion</u>	
Belmont	
Bayou Lamoque - Tested	
<u>Deposition</u>	
Manchac downstream	
Scarsdale downstream	
Concession downstream - Tested	16PL87
Alliance downstream	WP5-1
Point Michel downstream	
Luling upstream	
Rich Bend downstream	
Live Oak upstream	
Port Sulphur downstream - Tested	
<u>Stable Locales</u>	
Poydras mid-segment	
Concession - Vicinity of Belle Chasse - Tested	



Plate 9. Auger borings were made in areas of least recent disturbance. As this photograph illustrates, these loci were generally chosen on the basis of vegetation maturity. The area depicted here is located at the Live Oak Reveiment item on the landward side of the batture forest. No. 1575-18.

Shovel tests and auger borings were made along transects previously surveyed by the Institute's archeologists in the selected areas. The results of this testing are presented in Chapter 5 and the conclusions are presented in Chapter 7.

Site Definition

The recognition and definition of archeological sites, particularly historic sites, possess a methodological problem for any investigation

along the Mississippi River batture. Survey items were generally characterized by an almost continuous scatter of secondary historic and modern artifact deposition along the river bank (Iroquois Research Institute 1980b, 1980c). Extensive trash dumping also occurs along the landward edge of the batture forest near the riverside toe of the levee. The area between the batture forest and the levee is often used for dumping by local residents and contractors. To keep the levee toe clean, garbage is regularly bulldozed into the forest where it accumulates (Iroquois Research Institute 1980b, 1980c). Plate 10 illustrates typical log piles located along the batture forest.



Plate 10. A typical log pile located along the landward side of the batture forest in the Alliance Revetment item. No. 1565-7.

The need for discriminating between discrete clusters of important cultural materials recognizable as historic sites and widely distributed artifact scatters and dumps was a major concern. One could ignore the problem and inventory all historic cultural materials that are observed within each survey area. This approach would present secondary problems. Along many areas of the batture, fluvial action had deposited or uncovered

an almost continuous scattering of historic and modern trash. The effort required to adequately inventory these materials would far outweigh its value since most of it is secondarily deposited and chronologically intermixed.

A second solution would be to designate all discrete scatters of high density material such as brick, concrete, metal, and other items as sites; ignoring the presence of light density continuous deposits of items such as bottle glass, plastic, wood, metal containers, and other small artifacts. Davis et al. (1979) in a recent Mississippi River survey report, concede that such an approach introduces an arbitrary bias into site identification.

For the purposes of this study, historic sites were defined as extant, in situ structural remains or places where a domestic occupation or intensive economic activity took place. Unless shown to be historically significant by the background research, these criteria excluded roads, fences, isolated historic trash dumps, isolated artifacts, abandoned vehicles, and litter. For prehistoric remains the singular presence of a midden or artifact scatter would be sufficient criteria for designation as a site. Fluvial deposited or exposed artifact scatters were generally not recorded as sites unless there was evidence that they were associated with a definable occupation or activity area.

Site Verification Procedures

Site verification procedures were designed to record the nature and extent of archeological and architectural sites. At archeological sites, a site datum was established, usually near the site center. Vegetation was cleared from any structural features, and the area was photographed and mapped. Systematic surface collections were not made of any of the archeological sites discovered during this project due to poor surficial visibility of less than 25 percent and the absence of visible surficial artifact scatters. Instead systematic shovel tests, each measuring 30-by-30-by-30 centimeters, were performed to determine the presence and extent of subsurface remains. The interval between shovel tests ranged from three to six meters, but was held constant at any one site. The location of shovel tests and the interval between them can be determined from the site maps in the Background Data volume of this report.

Tests were conducted at regular intervals along the cardinal directions originating from the site datum. At site 16PL86, a subsurface site discovered in an auger test, the verification procedures were carried out using a soil auger instead of a shovel. The locations of borings are mapped in the Background Data volume. The horizontal extent of the archeological sites was calculated from the results of the site verification testing. If the site occurred in the vicinity of a cutback area, the walls of the bank were inspected for more deeply buried cultural material. All artifacts recovered from the surface and subsurface tests at each site were bagged by provenience. Provenience data were kept separate for all test units.

At architectural sites, vegetation cover was cleared to the extent possible and any structures were photographically documented. Field sketches and plan drawings were also made. All information, for both archeological and architectural sites, was recorded on standard field forms and in field notebooks. Specific site verification details have been incorporated in the site descriptions, Chapter 5.

Standing architectural sites were always examined by an architectural historian. If the building was older than 50 years, a background study to determine its significance was carried out using courthouse records and other historic sources. For historic archeological sites, a property records search was conducted when the project historians believed it possibly had an important historical association or if it stood on an historically important property. Otherwise, it was judged solely on its ability to yield data pertinent to archeological research problems.

Laboratory Methodology

A small sample of historic cultural materials was recovered from the surface and subsurface testing conducted during the field work phase of this study. These artifacts were washed, cataloged, described and dated. Provenience information was carefully maintained throughout the laboratory procedure. The artifact sample consisted entirely of historic artifacts and included ceramics, nails, miscellaneous metal artifacts, glass, bricks and plaster fragments. The methods for classifying nails and ceramics are explained below.

Nails

In general, only the broadest dates can be assigned to nails because of relatively slow changes in nail production methods. The only nails available in America prior to the late 18th century were handwrought. Cut nails, machine-made from sheet iron, were first produced in 1790 and gradually replaced handwrought nails. The heads were applied in a separate process until about 1815. From this time until about 1830, cut nails exhibited a waisting of the shaft beneath the head. Round-shafted wire nails were first manufactured in America in the 1850s, but initially only brads were produced. Large scale production of a wide variety of wire nails did not occur until the last quarter of the 19th century (Noel Hume 1978:252-254).

Ceramics

No comprehensive typology and chronology of the 19th century ceramics exists. Unlike 17th and 18th century ceramics, those from the 19th century are not easily distinguishable as discreet ware type. Nineteenth century ceramics are best characterized by a series of gradual technological and stylistic changes. This situation has hindered the development of a uniformly accepted typology. As a consequence, confusion may arise over the terms applied to various ceramic classes and the criteria by which they are distinguished. A system for classifying such ceramics into the technological attributes of paste and glaze, decorative

motifs, and form would help alleviate some of these problems. For these reasons, a four dimensional, paradigmatic classification system has been used to classify the ceramics from this survey. A more detailed discussion of paradigmatic classification is provided by Dunnell (1971) and Yakubik (1981).

To facilitate discussion of the ceramics found at the individual sites, each of the four dimensions, paste, glaze, decoration, and form, are discussed below. It is important to note that the attributes described for each dimension are only those pertinent to the collection from this survey.

Paste. The perfection of creamware by Josiah Wedgwood in 1767 contributed to England's increasing control of the world ceramic tableware market (Miller 1980:1). Creamware consisted of a refined, thin, cream-colored earthenware body with a clear glaze. The glaze was tinted with copper oxide that tended to puddle green in crevices. By 1779, Wedgwood had developed pearlware from creamware. Although it has been suggested that pearlware differed from creamware in the amount of flint in the paste (Noel Hume 1978:128), others have argued that the bodies of pearlware and creamware are virtually identical (B. Liggett, personal communication). The major distinction between the two types are their glazes, as described below.

By early in the 19th century, ceramic manufacturers were introducing small amounts of cobalt to the cream-colored earthenware body to produce a whiter looking paste. The body became thicker and generally coarser-looking over time. These changes occurred gradually between about 1900 and the 1920s resulting in a white-colored earthenware body, commonly referred to as whiteware. A similar 19th century type, ironstone or "stone china," also has white-colored earthenware paste. It seems likely that there are sufficient differences between whiteware and ironstone in terms of body composition and thickness to justify classifying them as different paste types; however, these differences are poorly understood. Because there is little agreement in the literature on the criteria that distinguish these types (Barber 1893:18-19; Noel Hume 1978:130; South 1977:211), both whiteware and ironstone will be referred to as having a white-colored earthenware paste.

Other paste types represented in the collection included red-colored and yellow-colored earthenwares. The color of an earthenware is due to and varies with the amounts of iron and other metallic impurities in the clay. Red-colored earthenware was the first American pottery type, and was used for utilitarian purposes throughout the 18th and 19th centuries (Ramsey 1947:128-138). Similarly, yellow-colored earthenware ranges from a buff to a brown-yellow color. First used in America in 1830, this paste type continued to be utilized throughout the 19th century for both utilitarian and decorative purposes. Generally, this opaque, porous, coarse paste was molded into thick heavy shapes, although the decorative pieces tended to be somewhat thinner bodied (Ramsey 1947:143-151).

Certain paste types were vitrified, suggesting they were fired at higher temperatures than the earthenwares. Stoneware has a dense, opaque body and exhibits a wide range of color. It was manufactured and utilized

in the United States from early in the 18th century, but did not become generally popular until after the American Revolution. Stoneware was wheel thrown into thick heavy shapes, such as crocks and jugs, and was popular for utilitarian use through 1900 (Ramsey 1947:138-143). Semi-porcelain, another vitrified paste type, has a very hard, dense, white body, and differs from true porcelain in that it is not translucent. It was first manufactured in the United States in 1880 for heavy table use (Ramsey 1947:153). Hard paste porcelain was first produced in China in the 14th century (Barber 1910:7), but was not manufactured in the United States until 1880 (Ramsy 1947:156). It was often molded into thin, delicate shapes.

Glaze. Transparent glazes appear on many types of ceramic bodies, such as white-colored earthenware, yellow-earthenware, stoneware, semi-porcelain and porcelain. Pearlware glaze, a variation of transparent glaze, was tinted blue with cobalt, and tended to "puddle" blue in the crevices. The cobalt also had the effect of whitening the ceramic piece. It was first used on a cream-colored earthenware body called pearlware. It continued in use through the first quarter of the 19th century, and was applied to the transitional white-colored earthenware body in use at that time (Sussman 1977:105-106). Similarly, the copper tinted creamware glaze was also used to glaze transitional white-colored earthenware. Tin glaze, an opaque, white glaze was used on many different body types and was seen in this collection on yellow-colored and white-colored earthenware. Another opaque glaze, Albany slip, was developed in 1810. It is brown to black in appearance and has a matte texture. It was primarily used to glaze the inside of stoneware vessels.

Rockingham glaze, a mottled brown opaque glaze resembling tortoise-shell, was used for decoration between 1830 and 1900 (Ramsey 1947:147). When applied to yellow-colored earthenware, the ceramic type is called Rockingham ware. A similar, mottled brown glaze is often found on red-colored earthenware; this type appears between 1700 and 1900 (Ramsey 1947:131).

Decoration. Many types of decoration were possible on ceramics, and often the type or the style of decoration can help determine when a piece was manufactured. One of the most basic forms of ceramic decoration was handpainting. Underglaze blue handpainted pearlware, for example, was popular between 1780 and 1820 (South 1977:212). Shell edging, another handpainted decoration, was found on pearlware and transitional white-colored earthenwares between 1780 and 1830 (South 1977:212; Noel Hume 1978:131).

Annular decoration was a popular type found on pearlware and transitional white-colored earthenwares between 1797 and 1815. Thin bands of color were used to fill engine turned grooves on the vessel. This decoration was commonly found on mugs, jugs and bowls (Noel Hume 1978:131). Simple incised lines filled with cobalt were common on stoneware vessels between 1790-1900.

Ceramics with transfer-printed decoration were among the highest priced wares of the 19th century (Miller 1980:4). Transfer printing was accomplished by engraving a pattern on a metal block, printing the pattern

on a piece of paper, and then applying the paper to the vessel. Developed in the mid-18th century, the process was particularly popular in the 19th century and is found on pearlware, transitional white-colored earthenwares, and white-colored earthenware. In the 1810s and 1820s, transfer printing was done in a deep, rich blue. Most were topographical subjects, frequently of American landscapes. The borders at this time were large flowers, or groupings of shells or other large units (Wakefield 1962:19). The willow pattern was also common at this time, and remains popular today.

The 1830s and 1840s saw the introduction of more colors and more detailed printing. Topographical motifs continued in popularity through the 1860s, but the subjects were often fanciful and romanticized (Wakefield 1962:20-33). Additional colors included pale blue, used between 1831 and 1865, and pink produced from 1826 and 1875 (Bartovics 1978:213). There was also a tendency in the 1860s to divide the border into panels and place subsidiary scenes within them (Wakefield 1962:24).

Form. The terms plate, cup, saucer, and others are familiar with regard to their forms and functions. However, due to the small size of some of the fragments collected, it was not always possible to determine the original form of each vessel.

CHAPTER V

SURVEY RESULTS

Overview

During the archeological survey of Work Packet 5, 13 historic sites, summarized in Table 5, were discovered. No prehistoric archeological evidence was observed in any of the survey areas.

TABLE 5

SURVEY RESULTS

Field Site Number	State Site Number	Site Description	Site Size (m ²)	Subsurface Deposits	Site Function	Survey Item
WP5-1	*	Catwalk	70	Not applicable	River access	Alliance
WP5-2	16OR68	Furnace	500	Present	Sugar refining	Cutoff
WP5-3	16SB104	Brick Piers	1,600	Present	Structural support	Poydras
WP5-4	--	Number unassigned				
WP5-5	*	Wooden platform	6	Not applicable	Unknown	Alliance
WP5-6	16PL85	Brick piers	480	Present	Structural support	Alliance
WP5-7	*	Two residential structures	75	Not applicable	Residence	Poydras
WP5-8	16SU105	Canal lock	270	Not applicable	Navigation	Poydras
WP5-9	16SC47	Concrete platform	2	Not applicable	Possible navigation light base	Luling
WP5-10	16SJ32	Brick platform	100	Not applicable	Structural support	Rich Bend
WP5-11	16SJ33	Bricks/pipe	110	Present	Possible pump house foundation	Rich Bend
WP5-12	16PL86	Subsurface find	300	Present	Unknown	Live Oak
WP5-13	16SB106	Concrete support	18	Not applicable	Possible pump house foundation	Poydras
WP5-14	16PL87	Sea train terminal	25,900	Not applicable	Transportation	Concession

* State site numbers were not assigned to properties less than 50 years of age.

The site locations were distributed among 7 of 14 survey items, namely Alliance, Cutoff, Poydras, Luling, Rich Bend, Live Oak and Concession. The distribution of the discovered sites relative to areas of erosion and deposition is indicated in Table 4.

With the exception of site 16PL86, located in an auger boring, all the sites were found while doing walkover transects across the batture. No sites were discovered in shovel tests, however, shovel testing was used to determine the extent of site areas.

In addition to the recorded sites, extensive and widespread scatters of historic and modern material occurred in each survey item. Much of this material was apparently deposited or scattered by the river or the result of trash dumping activities within the batture. Also common along the levee side of the batture forest were old revetments consisting of concrete fragments.

River deposited material was characterized by a generally uniform and omnipresent distribution of flotsam and jetsam, consisting of driftwood, lumber, metal, buoys, rope, plastic objects, ship and barge fittings, cans, bottles and bottle glass, and other items. Such material was found throughout the batture but was particularly common along the riverbank. Strand lines were often visible within the batture as evidence of high water periods.

Three site locations, previously recorded by J. Richard Shenkel and Dave Davis were also inspected. Site 16IV127, a prehistoric site recorded by Shenkel in October 1976, was located, according to the files of the Division of Archaeology and Historic Preservation in Baton Rouge, approximately 100 meters downstream from the navigation light situated in the upstream segment of the Manchac Revetment right-of-way. The site consisted of a light scatter along the beach of Late Coles Creek ceramics. According to Iroquois Research Institute's geomorphological analysis of the Manchac right-of-way presented in Chapter 2, the site is located in a zone of severe erosion. The Institute's archeologists inspected the site area and found it completely flooded with no trace of artifacts in non-flooded areas adjacent to the site. Because of erosion, it is very probable that the site has been destroyed. The navigation light located upstream, for example, was being severely undercut by the river at the time of the Institute's field inspection.

Two historic artifact scatters, sites 16PL78 and Y16PLA, were recorded by Davis et al. (1979) within the Bayou Lamoque survey item. The locations of both sites were underwater and could not be inspected.

Site Descriptions

WP5-1

Site WP5-1, a wooden catwalk, was located within the Alliance Revetment survey item in Plaquemines Parish, near the Gulf Alliance Refinery. The catwalk was situated on the batture which was overgrown with willows and a dense undergrowth of brush and grasses making surface visibility very poor. The soil near the site was silty.

The catwalk extended across the batture perpendicular to the Mississippi River. It was approximately 70 meters long, 2 meters wide and 4.5 meters high, and was supported by a system of heavy upright posts and crossbars held in place by large bolts. The entire structure had been waterproofed and was in excellent condition.

Verification at site WP5-1 included taking measurements and photographs of the structure. No associated artifacts were found.

The good condition of the catwalk suggests that it was probably built within the last twenty years. It may have been associated with the refinery and used to load and unload supplies from boats in the river. Because of its overgrown condition and because it no longer connects with anything, it appears evident that the catwalk is no longer used.

16OR68

Site 16OR68, a furnace, was found within the Cutoff Revetment survey item in Orleans Parish. The furnace, illustrated in Plate 11, was situated in a relatively clear area of the batture, used recently for trash disposal. The structure was covered with poison ivy, viny plants,



Plate 11. The north wall of the main furnace structure at site 16OR68. The two archeologists are collecting a soil sample from a flue. A second flue is visible near the lower right corner of the photograph. The Mississippi River can be seen in the background. No. 1564-9A.

and a few small trees. An automobile, heavy steel cables and a large fallen tree were lying along the southern wall of the structure, making it inaccessible to the archeologists recording the site. The ground surface immediately surrounding the furnace was obscured by grass. A few small willows were growing along the riverbank which had been stabilized with riprap. Numerous chameleons and a snake were observed on the structure.

The site was located in an area of erosion; consequently, it is unlikely that the furnace was originally built on the batture. During the construction of the levee, this rather massive structure was apparently left intact.

The furnace, constructed of brick, consisted of three parts: a brick-lined pit near the riverbank, the main structure, and an adjacent narrow brick structure. The plan and elevations are illustrated in Figure 16.

The brick-lined pit, near the north corner of the main structure, measured approximately 1.3 meters wide by 1.6 meters long and was filled with modern debris. The narrow brick structure was located within one meter of the southwest wall of the main brick structure, the gap between them being filled with brick debris and modern trash, the latter of which had no relation to the structure's function. The brick debris had resulted from the structure's gradual deterioration. The narrow structure measured 2.7 meters wide and 23 meters long at ground surface. It tapered toward the top and was almost 2 meters high. The top measured 1.8 meters wide by 6.5 meters long. A recess was evident near the northwest corner.

At ground surface, the main structure measured 8.2 meters along the southeast wall and 12.1 meters along the northeast wall and stood 1.9 meters high. The two flue openings, both visible in the northwest and southeast walls, measured approximately 60 centimeters wide by 60 centimeters high at their northwest entrance.

Located on top of the northwest half of the main structure were two 90 centimeter deep recesses. The one along the northeast wall measured 1.07 meters by 1.5 meters. The recess 1.8 meters to the southwest, measured 1.3 meters by 1.03 meters. A third recess, 94 centimeters deep, in the southeast half of the structure, measured 4.5 meters long and 1.07 meters wide. Several protruding iron posts as well as a deposit of ash and mica were observed on top of the furnace.

Verification at site 16OR68 included mapping, photographing the structure and excavation of 18 shovel tests at 5 meter-intervals around it. An auger boring was also done and a description of it is provided in Appendix B. Soil, ash and brick samples were collected.

Two cut nails and 14 ceramics were recovered. Two sherds of transparent glazed semi-procelain came from the brick-lined pit; these appear to be pieces of an insulator. Two sherds of red-colored earthenware were also found. One of these had an opaque brown glaze. Its small size made definite determination of form difficult but both the

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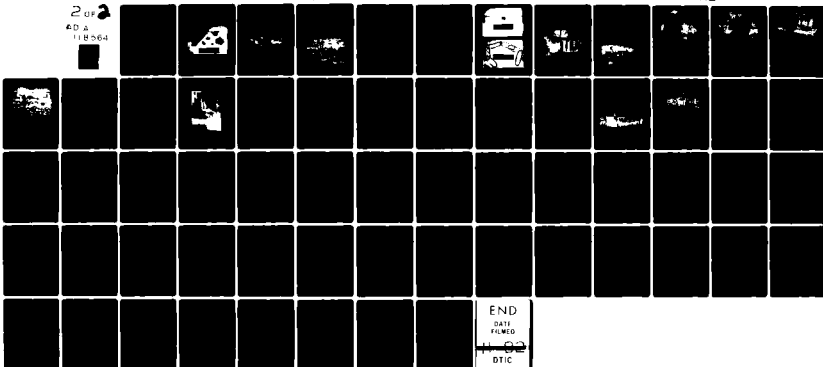
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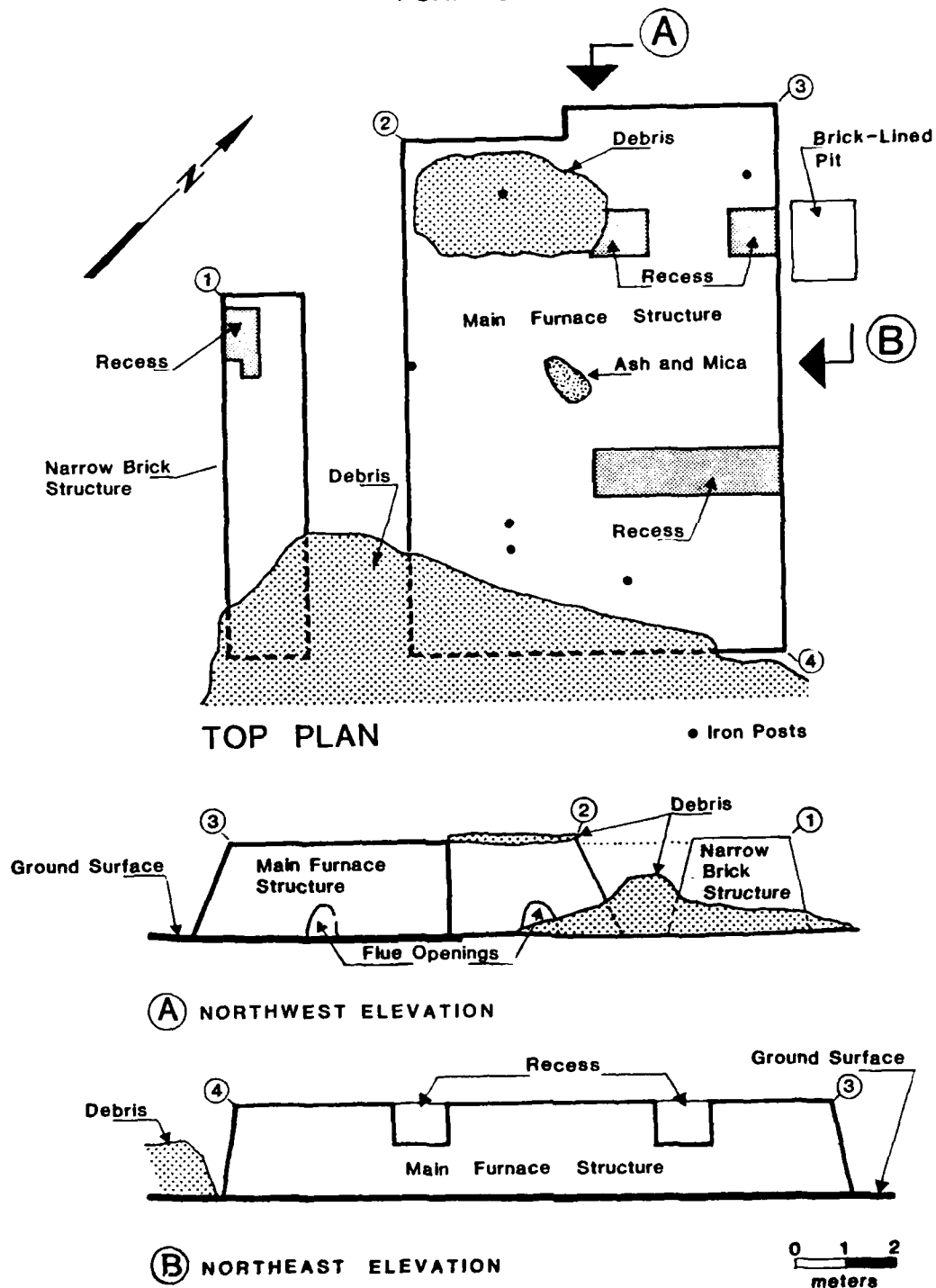
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FIGURE 16

PLAN AND ELEVATIONS OF SITE 160R68
FURNACE



glaze and the paste resembled those used for drainage pipes. The second sherd is unglazed; it is somewhat vitrified and has the surface appearance of stoneware. Its function could not be determined.

One piece of white-colored earthenware with an opaque white tin glaze was also found. It appeared to be a fragment of modern tile. The remaining nine ceramic sherds consisted of white-colored earthenware with transparent glaze. Two sherds, one saucer and one cup, were not decorated. Seven had a blue transfer printed willow pattern decoration; they are illustrated in Plate 12. Of these, one was a cup, four were plates and two were of an undetermined shape. All nine sherds appeared to date between 1875 and the early 20th century.

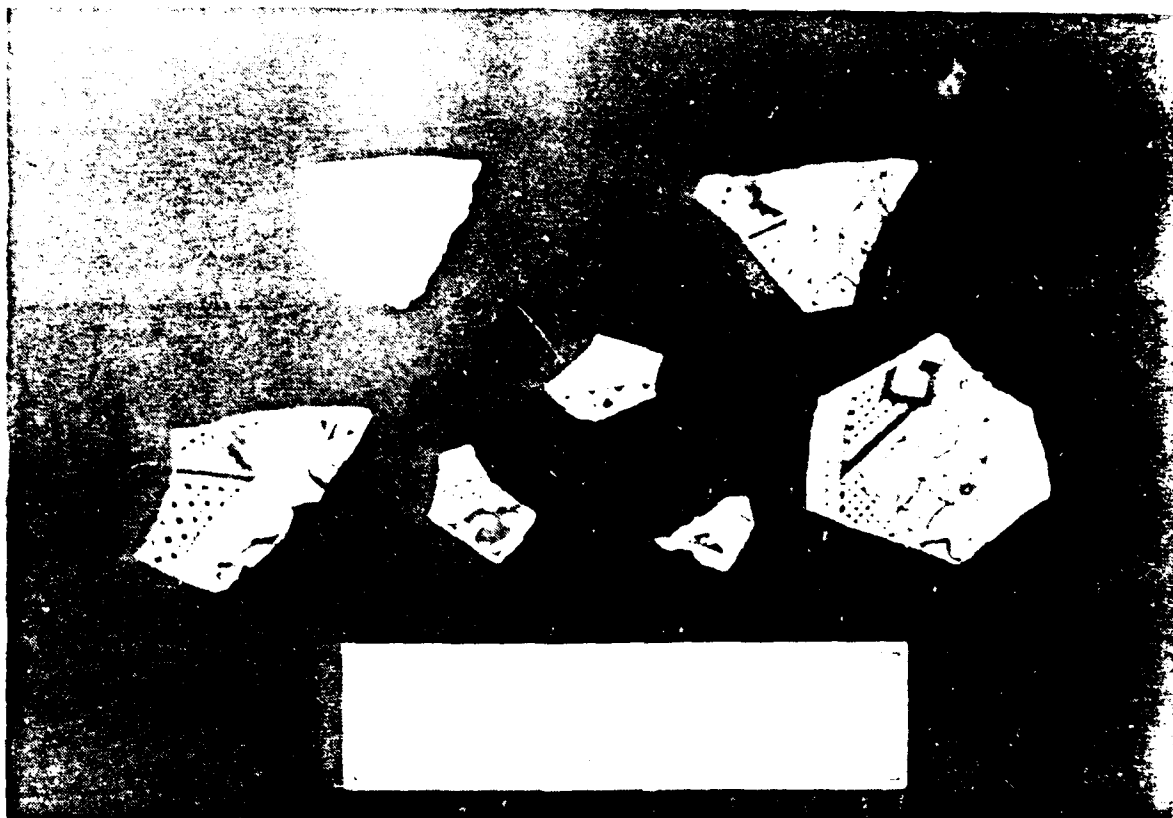


Plate 12. Transfer printed ceramics from 1600s. No. 15/8-1

It is interesting that all the ceramics other than the tableware fragments were found in shovel tests, with the exception of the insulator sherds found in the brick-lined pit. The tableware sherds were all surface finds. This suggests that the industrial-type ceramics may have been more closely related to the function of the site. As there is no evidence of a living structure, it seems likely that the tableware was brought to the site from elsewhere.

16SB104

Site 16SB104, a brick scatter, was located within the Poydras Revetment survey item in St. Bernard Parish. It was situated in a densely wooded area along the batture. Vegetation on the site included willows, poison ivy and grasses. Surface visibility was poor. The soil consisted of a silty humus layer over clay.

The site covered an area of approximately 1,600 square meters. The brick scatter was observed extending approximately 110 meters along the bank. Drain tile and metal fragments were also visible on the surface. Four brick piers were observed; three were visible on the ground surface and one, illustrated in Plate 13, was uncovered in a shovel test.

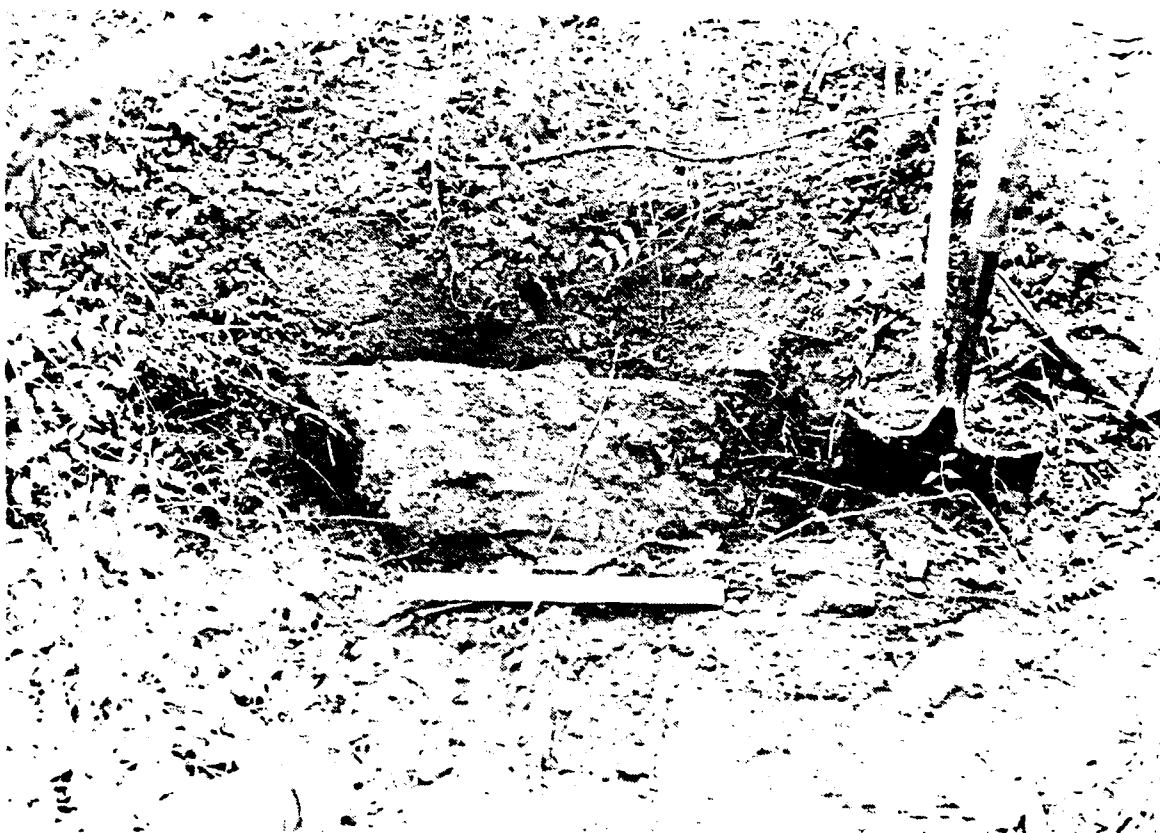


Plate 13. Brick pier uncovered in a shovel test at site 16SB104. The scale in the foreground is approximately 33 centimeters long. No. 1570-13

Verification included the excavation of 19 shovel tests at 5 meter intervals radiating in the four cardinal directions from the approximate center of the site. Brick and some metal fragments were observed in the shovel tests. Two badly corroded nails, one square and one wire, were the only diagnostic artifacts recovered at this site. It is difficult to make any statement on the basis of such limited evidence. The presence of the square nail suggests that a structure in this area, possibly related to

the standing brick piers, was built during the 19th century. The wire nail may either suggest that this structure was repaired in the late 19th or 20th century, or that a later, second structure existed.

WP5-5

Site WP5-5, a wooden platform, was found within the Alliance Revetment survey item in Plaquemines Parish near Gloria. The platform was within the batture forest, surrounded by tall willows and undergrowth. A well-used path came within 20 meters of the platform's southern side. The site was located approximately 15 to 20 meters inside the batture forest; the soil around the site was sandy.

The platform was supported by four 4-by-4 inch posts and was elevated approximately 2 meters above the ground. It was 2.7 meters long by 2.1 meters wide and had been covered with blue indoor/outdoor carpeting.

Verifications at site WP5-5 included making a sketch of the platform and taking photographs. Some modern trash was observed under the structure. The site appeared to be of recent construction and probably used for recreation.

16PL85

Site 16PL85, an historic artifact scatter and brick piers, was located within the Alliance Revetment survey item in Plaquemines Parish. The piers, one of which is illustrated in Plate 14, were found in a wooded

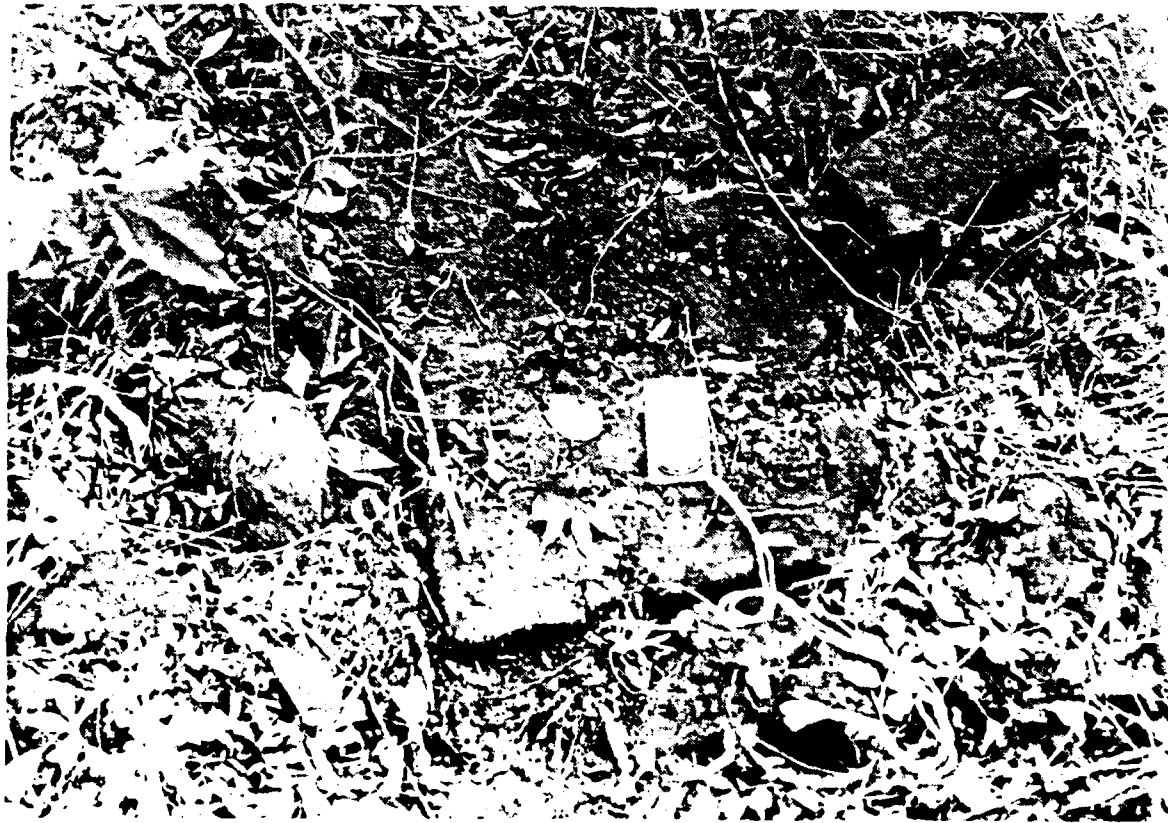


Plate 14. One of the brick piers located at 16PL85. The compass is approximately 13 centimeters long. No. 1576-11.

segment of the batture, surrounded by light underbrush, willows and ficus trees. Surface visibility was moderate to poor. The site area was approximately 25 meters from the riverbank.

The site covered an area of approximately 480 square meters. Three brick piers were noted near the northern border of the site and a fourth was located near its center. A light scatter of ceramics was observed across the site area.

Verification included mapping and photographing the site area and the excavation of 23 shovel tests to determine its subsurface extent. Among the cultural materials discovered were ceramics, nails, a length of chain, and some plaster fragments. The bulk of the recovered artifacts consisted of several types of ceramics, summarized in Table 6, dating between 1790 and 1900. Materials were recovered to a depth of 30 centimeters indicating that the subsurface deposits extended to at least the depth of a single shovel test.

Five paste types were represented among the 16 ceramic sherds collected from shovel tests at site 16PL85. The most common was a transitional ware having characteristics of both cream-colored and white-colored earthenware. Nine of the sherds had a transparent glaze on the exterior, six had a pearlware glaze and one had a creamware glaze. Decoration included hand-painting in cobalt blue; transfer printing; shell edging in blue and green; annular decoration in green, blue and black; and incised lines filled with blue. The transfer printing is illustrated in Plate 15. Eight sherds were undercordated. Forms consisted of bowls, plates or saucers, platters, a cup, and a possible bottle.

The metal artifacts were badly corroded and consisted of a length of chain and three nails, all recovered in shovel tests. The chain, illustrated in Plate 16, was composed of six links, each approximately 9 centimeters long and possibly hand-wrought. The chain's function and age could not be determined. Two wire nails, dating post-1875, and a wrought L-headed nail used for flooring and trim in the 18th and 19th centuries, were the only other metal artifacts collected.

The 14 plaster fragments were hard and dense with a chalky surface. Most likely they were related to a structure that had existed on the site.

Other than one piece of undercordated, white-colored earthenware, the hand-painted sherd, the stoneware sherd and one of the wire nails, all of the artifacts were found within the area of highest brick concentration. This suggests a fairly dense concentration of artifacts immediately around the previously existing structure. The dates associated with the ceramics suggest an early date for the site; however, very early ceramic types often appear in later contexts in this area of Louisiana. Only through further testing can an accurate date for this site be determined. It seems safe to say that the structure on this site was used for habitation at least by the mid-19th century. The site is located adjacent to the area of the former Star Plantation. Its precise relationship to historical properties in the area, however, must be determined by way of additional archival research.

TABLE 6

HISTORIC CERAMICS FROM 16PL85

Number of sherds	Paste	Glaze	Decoration	Form	Date
1	Transitional-cream colored earthenware to white colored earthenware	Creamware	None	Bowl	1790-1815
1	Transitional-cream colored earthenware to white colored earthenware	Pearlware	Hand-painted in cobalt blue	Not determined	1790-1815
1	Transitional-cream colored earthenware to white colored earthenware	Pearlware	Transfer printed in deep blue	Cup	1790-1815
2	Transitional-cream colored earthenware to white colored earthenware	Pearlware	Shell-edged in blue	Plate or saucer	1800-1830
1	Transitional-cream colored earthenware to white colored earthenware	Pearlware	Shell-edged in green	Plate or saucer	1800-1830
1	Transitional-cream colored earthenware to white colored earthenware	Pearlware	Annular decoration in green, blue and black	Not determined	1800-1830
1	Stoneware	Transparent glaze, Albany slip interior	Incised line decoration filled with blue	Not determined	1810-1900
1	White colored earthenware	Transparent	None	Plate	1825-1900
1	White colored earthenware	Transparent	None	Platter	1825-1900
2	White colored earthenware	Transparent	None	Not determined	1825-1900
1	White colored earthenware	Transparent	Red transfer print-topographical subject	Not determined	1826-1875
1	Yellow colored earthenware	Transparent glazed exterior, tin glazed interior	None	Bowl	1830-1900
1	Yellow colored earthenware	Transparent	None	Possible bottle	1840-1890
1	Hard-paste porcelain	Transparent	None	Not determined	post-1880

16 Total

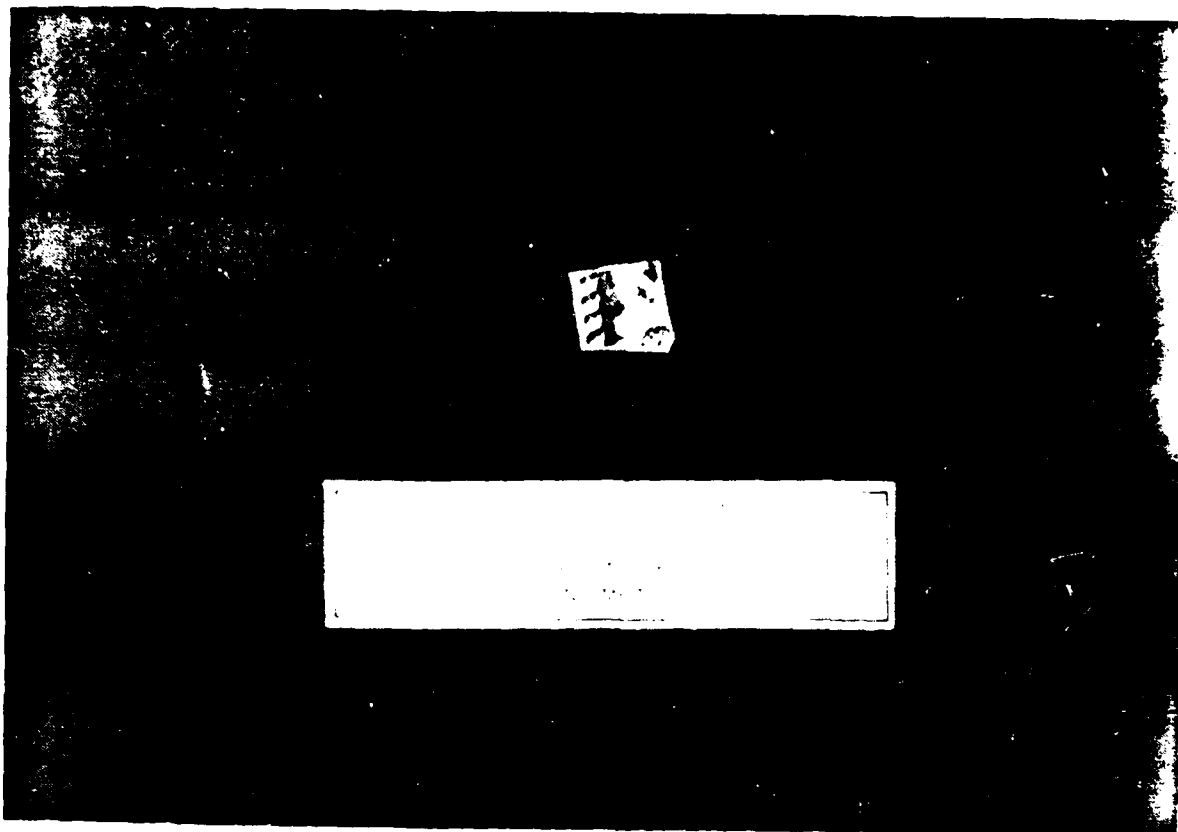


Plate 15. A transfer printed sherd from 16PL85. No. 1578-1.

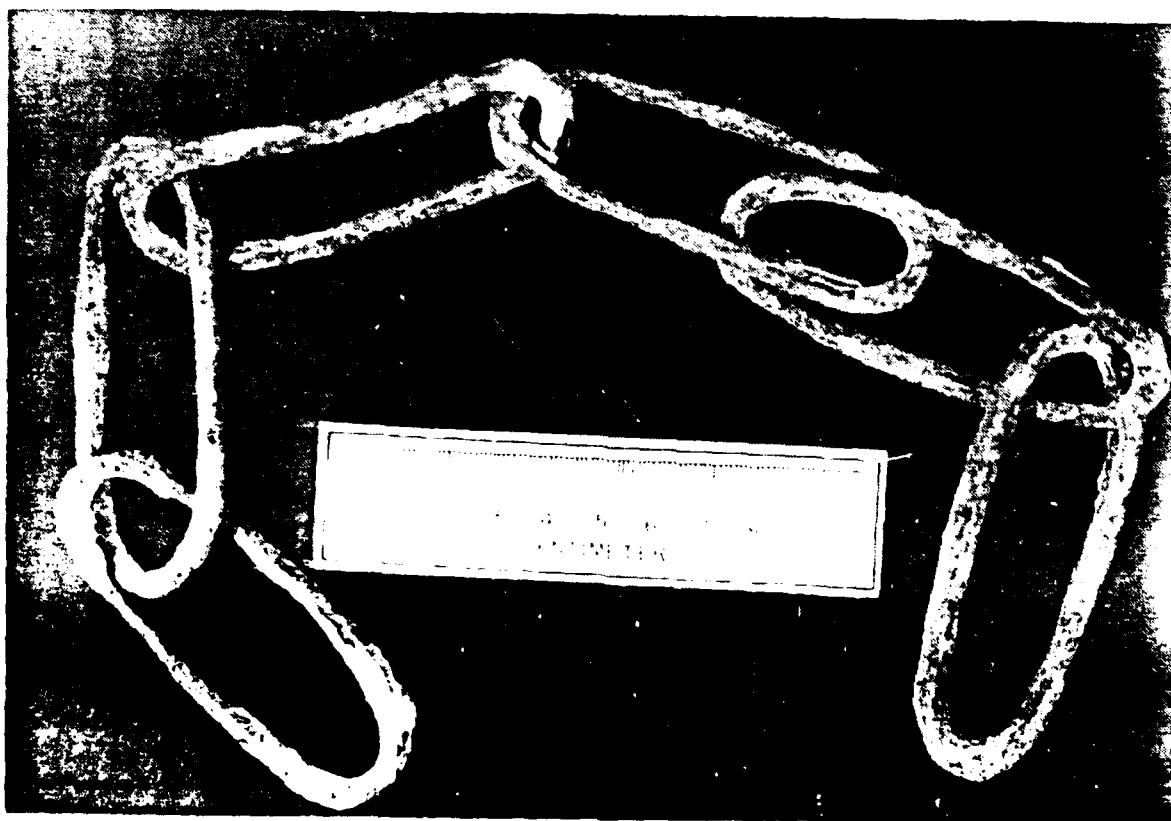


Plate 16. A length of chain recovered from 16PL85. No. 1578-11

WP5-7

Site WP5-7 consisted of two structures located within the Poydras Revetment survey item in St. Bernard Parish near Violet. The two buildings were situated on the batture in a cleared area, just south of the Lake Borgne Canal Lock. They were in fair condition. Mrs. Ralph Payne, a resident of the southern structure, pointed out that the river has considerably eroded her backyard.

The southern structure, depicted in Plate 17, was supported by wooden pilings. The walls were constructed of milled lumber and were covered with weatherboarding. The front gable roof was covered with corrugated tin sheeting. Windows on the north and east sides were double-hung sash windows; a door was located on the north side. This house measured approximately 3.5 meters high, 5.7 meters wide and 12.3 meters long.

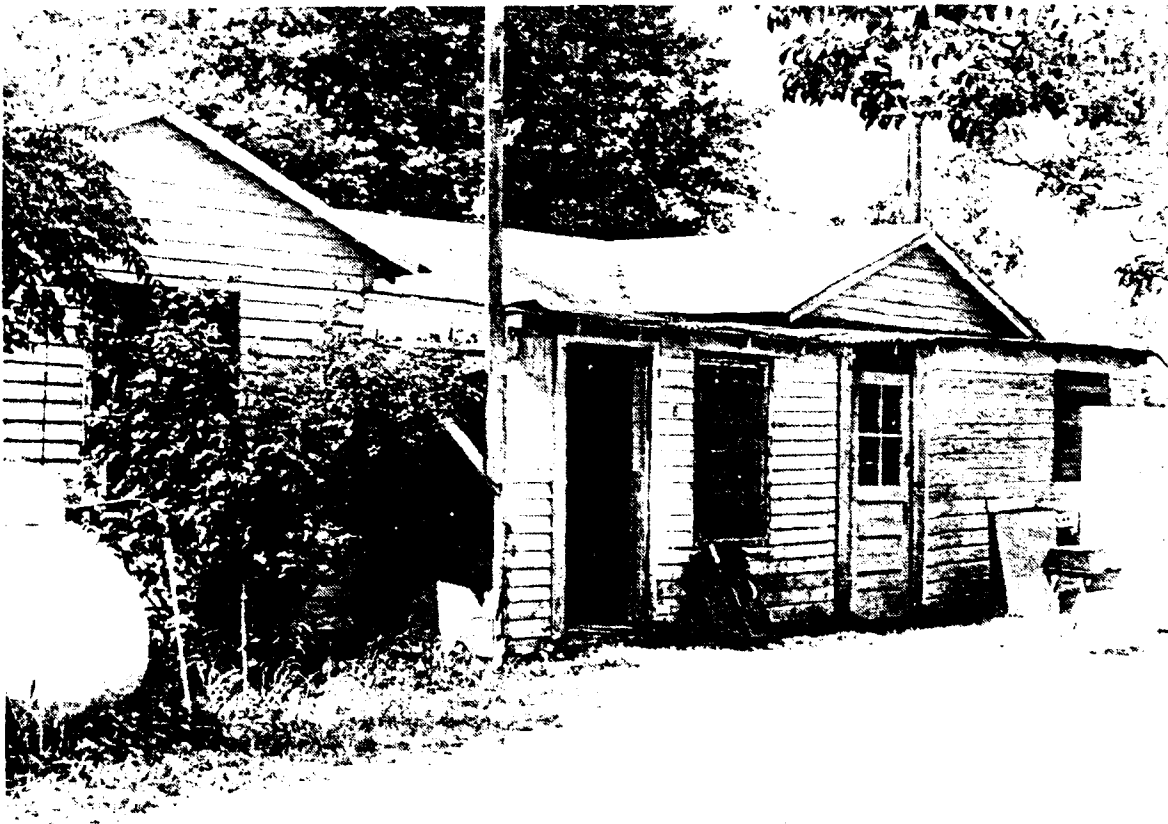


Plate 17. Northern elevation of the large house at site WP5-7, located near the Lake Borgne Canal Lock. No. 1577-13A.

The smaller northern structure was constructed of similar materials. The open foundation of wooden pilings supported weatherboarded walls of milled lumber. The end gable roof was covered with corrugated tin

sheeting. The structure measured approximately 2.7 meters high, 5.5 meters wide and 7.8 meters long.

Verification procedures consisted of sketching and photographing the structures. According to Mrs. Ralph Payne, the houses were built at least 30 years ago. Originally, the buildings may have housed the keeper of the nearby Lake Borgne Canal Lock.

16SB105

Site 16SB105, the remains of the Lake Borgne Canal Lock, were located in the Poydras Revetment survey item near Violet in St. Bernard Parish, approximately 35 meters from the riverbank. The U.S. Coast Pilot (1981:186) contains a notation regarding the lock:

Violet about 72.8 miles (AHP) is on the E side of the river at the head of the Violet Canal. The lock which formerly gave access to the Mississippi River is no longer operable as the canal has been blocked by the levee.

The structure, depicted in Plates 18 and 19, is now covered with poison ivy and other vegetation, making visibility very poor.

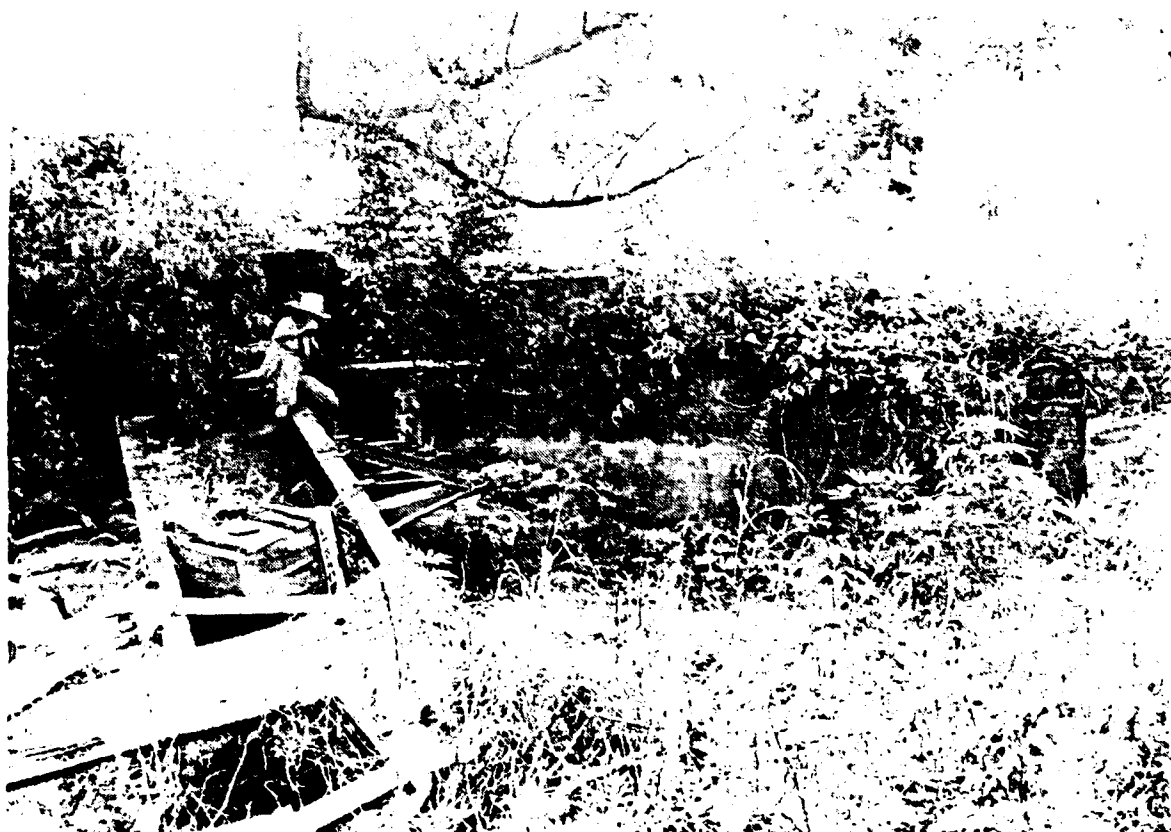


Plate 18. View of the south side of the Lake Borgne Canal Lock, site 16SB105. The archeologist is sitting on one of the iron gates and is facing the Mississippi River. The standing structures of WP5-7 are visible in the upper left corner. This photo is looking south. No. 1574-C



Plate 19. View of the south side of the Lake Borgne Canal Lock, site 16SR105, looking east away from the Mississippi River. A gate hinge is visible near the left edge of the photograph. No. 1577-19A.

The lock consisted of two concrete and brick piers 13.6 meters apart. Its gates were no longer attached but were lying between the structures. Both piers were virtually identical, measuring 2.7 meters high, 11.5 meters long and 4.7 meters wide. They were oriented perpendicularly to the Mississippi River. A brick buttress was located on the exterior side of both structures. A concrete platform, probably a light or marker support, had been constructed on the exterior side of the southern structure. The lock was mapped and photographed.

16SC47

Site 16SC47, a concrete platform, was located within the Luling Revetment survey item south of Hahnville in St. Charles Parish. The platform, illustrated in Plate 20, was situated on the batture approximately 25 meters from the bank of the Mississippi River. The surrounding vegetation consisted primarily of willow trees. Soil at this site was moderately well drained and silty.

The concrete platform measured 65 centimeters high, 95 centimeters wide and approximately 2.8 meters long. It was apparently sinking along the west wall. Four steel reinforcement rods protruded slightly from the top of the platform.



Plate 20. Site 16SC47, a concrete platform, located on the batture south of Hahnville, Louisiana. The platform probably supported a navigation light. No. 1572-14A.

Verification procedures at this site included sketching and photographing. It probably functioned as a navigation light support since a relatively new light was located just downstream. No artifacts were observed.

16SJ32

Site 16SJ32, consisting of two low brick structures, was located within the Rich Bend survey item in St. James Parish. The site was situated in the batture forest and was surrounded by poison ivy, low undergrowth and medium-sized trees approximately 30 meters from the bank of the river. Soil near the site was moderately well drained and silty.

The brick structures were situated approximately 1 meter apart. The small structure measured approximately 43 centimeters high, 40 centimeters wide and 1.4 meters long. The larger structure, illustrated in Plate 21, was approximately 21 centimeters high, 1.1 meters wide and 1.9 meters long. Four threaded iron bars protruded from the top of this structure. West of the brick structures, some wooden planking was observed attached to the bank. A pile of brick rubble and metal conduit fragments were recorded east of the brick structures.



Plate 21. View looking east showing one of the two brick structures at site 16SJ32. The average height of the four threaded iron bars protruding from the top of the structure was approximately 16 centimeters. No. 1563-7.

Verification at site 16SJ32 included mapping and photographing the site area. No artifacts were observed in association with this structure.

16SJ33

Site 16SJ33, a brick and cinder block scatter, was located in the Rich Bend survey item in St. James Parish near Laurel Ridge Plantation. A portion of this site is illustrated in Plate 22. The site area was surrounded by an immature forest composed of birch, hackberry and beech trees and a thick undergrowth containing poison ivy and other vines. Soil at the site consisted of a compact sandy clay silt. The brick scatter was situated on the landside of an overgrown levee that had been partially removed, apparently to allow pipes to run to the river. A flooded borrow pit was noted east of the site.

The site covered approximately 130 square meters. Several piles of brick rubble were observed and appeared to be the remains of piers. Other materials found on the site included cinder blocks, lengths of metal pipe and poured concrete with a piece of clay pipe imbedded in it.



Plate 22. A view of 16SJ33, looking southwest, showing an area of brick and cinder block rubble. This site had been called a "pumphouse" by local residence. The poor surface visibility conditions at this site are typical of visibility conditions along the batture. No. 1580-6.

Verification included mapping and photographing the site area and excavation of 10 shovel tests and two auger borings, the latter described in Appendix B. With the exception of some brick fragments recovered at a depth of 25 centimeters in an auger boring and a piece of plastic from a shovel test, the results of the subsurface testing were negative.

This site was referred to as an "old pumphouse" by some local residents. The structural remains present at this site appeared to be representative of 20th century building materials.

16PL86

Site 16PL86, a subsurface find, was discovered in an auger test in the Live Oak Levee Enlargement survey item in Plaquemines Parish. This particular area had been chosen for testing due to the relatively well-drained appearance of the soil and the presence of mature trees. Brick fragments were initially recovered from a depth of 90 centimeters. Subsequent testing determined that the site area encompassed approximately 300 square meters. No surface manifestation of this site was apparent.

The cultural material consisted of two sherds and a fragement of fire-brick of indeterminant age. One sherd, a piece of undercorated, white-colored earthenware with a transparent glaze, dated between 1825 and 1900. The other sherd was identified as Rockingham ware and was dated between 1830 and 1900. Both sherds were too small to allow determination of form.

Verification procedures included mapping and photographing the site area and the excavation of 10 additional auger borings. Five of these yielded historic cultural material. Four borings, placed in the mowed portion of the batture adjacent to the levee revealed a disturbed soil profile without orderly or logical sedimentary strata. Evidence of relatively recent disturbance included incompletely decayed fragments of wood and random occurrences of concrete fragments. The disturbed nature of this soil is probably the result of modern levee and revetment construction.

Five of the ten borings were placed in the wooded portion of the batture along the cardinal axes of a central datum. The soil profile here consisted of a brown, sandy loam from 25 to 40 centimeters thick, overlying a stratum of brown loam to sandy clay loam 30 to 40 centimeters thick. Below the sandy clay loam was a less well defined silty clay about 10 centimeters thick grading gradually into the deepest stratum of gray-brown plastic clay. Detailed soil profiles are provided in Appendix B.

A possible depositional sequence for the site can be inferred from the soil stratigraphy. The deepest stratum within the profile was composed of clay, characteristic of the fine-grained sediments deposited by the river in backswamps or in the still water of a borrow pit. The presence of 19th century artifactual material within the clay matrix means that the clay deposited within the stratum was laid down during the same period. It can be inferred from the geomorphological evidence presented in Chapter 2 that this area was not a backswamp during the 19th century. The clay, therefore, was probably deposited in a former borrow pit in which cultural material materials were also dumped. The sandy stratum covering the clays had been deposited by overbank flooding after the borrow pit was filled or nearly filled.

The oldest trees, composed of willows and hackberries, were estimated to be about 35 to 40 years old. Consequently, the artifact stratum could have been deposited as recently as 60 years ago, allowing for a 20-year period for overlying sediment accumulation. The recovered artifacts, however, indicate that the deposit could be somewhat older, dating to the 19th century.

16SB106

Site 16SB106, a concrete pumphouse foundation, was located within the Poydras Revetment survey item in St. Bernard Parish, near the Poydras Crevasse. The platform was surrounded by willows and appeared to have been built on an earthen embankment. The structure measured approximately 3 by 6 meters.

Verification included making a sketch of the site and interviewing Mr. Eugene Bell, a nearby resident. According to Mr. Bell, the pumphouse was built in 1936 and abandoned in the late 1940s.

16PL87

Site 16PL87, the Seatrain Terminal, was located within the Concession Levee Enlargement survey item in Plaquemines Parish. In the U.S. Coast Pilot (1981:186) the Seatrain Terminal is described as follows:

A sea train terminal wharf, with depths of 35 feet reported alongside, is on the W side of the river above Oak Point about 64.6 miles (AHP). A 150-ton loading gantry is conspicuous at the wharf.

The large structure is situated on the batture and extends into the Mississippi River. The surrounding vegetation was composed primarily of willow trees with areas of dense undergrowth making surface visibility generally poor.

The Seatrain Terminal consisted of a curved wooden trestle carrying railroad tracks out onto the river past two large steel derrick towers, illustrated in Plate 23. The entire site encompassed 380 meters of riverbank. The trestle near the southern end of the structure had been partially destroyed by fire, but the rest of the structure appeared intact. Verification procedures employed in the field included mapping and photographing the structure.

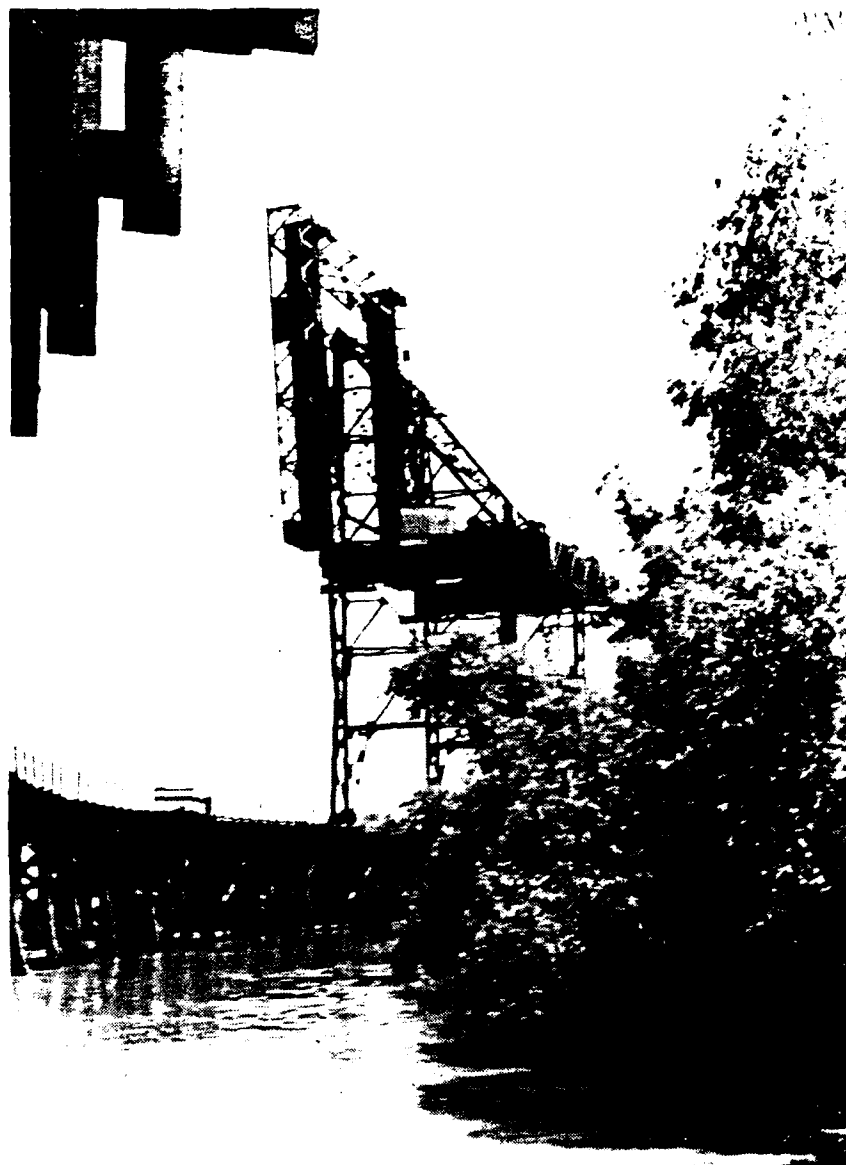


Plate 23. Tower associated with the Seatrail Terminal, site 16PL87. This view is from under the trestle, looking downstream. No 1571-19A.

CHAPTER VI

SIGNIFICANCE

The eligibility of historic or prehistoric properties for nomination to the National Register of Historic Places is based upon the criteria of significance promulgated by the United States Department of Interior in the Code of Federal Regulations, Title 36, Chapter I, Part 60.6. They are as follows:

National Register Criteria for Evaluation. The quality of significance in American history, architecture, archeology and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history (Code of Federal Regulations, Title 36, Chapter I, Part 60.6).

Properties or sites inventoried for Work Packet 5 fall into eight categories based upon function: river access, navigation, transportation, residential, building support, industrial, water acquisition or removal and unknown. The significance, according to the Department of Interior's criteria, of each property within these categories is discussed below.

River access. The wooden catwalk, site WP5-1, is the only property placed in the river access category. It leads to the river from the levee toe adjacent to the Gulf Alliance Refinery. Although it cannot be documented by historic records, it appears to be younger than 50 years. Given that it is not a unique structure and that it may be less than 50 years old, it does not conform to the criteria of eligibility.

Navigation. The concrete navigation light support, 16SC47, could not be documented with historic records. It is located adjacent to a new navigation light tower that is presumed to have replaced the concrete base. It is not unique nor is it an historically important property; therefore, it is not considered eligible for nomination to the National Register of Historic Places.

Site 16SB105 consists of the brick and concrete piers and the rear gate of the Lake Borgne Canal Lock. Originally, the lock measured 261 feet long and 40 feet wide and consisted of a six-foot deep, earth-chambered structure with steel miter gates swinging from concrete blocks at each end (House of Representatives 1937:3). Today, the chamber walls no longer exist and the rear gates lie broken between the piers. The front gates have disappeared.

The Violet Canal was designed as an improvement to Bayou Dupre, a 3.6 mile long stream measuring 90 to 240 feet wide and 8 to 19 feet in depth that connects the Mississippi River with Lake Borgne. After the canal was first dredged, in 1886, the St. Louis, New Orleans, and Ocean Canal and Transportation Company built a lock funded by a grant from the State of Louisiana. The lock measured 20 feet wide. Because of shoaling, the lock was abandoned sometime before 1900, and the connection with the Mississippi River blocked (House of Representatives 1937:7).

In 1900 the Lake Borgne Canal Company took over the property, enlarged the canal and, in 1904, built the present lock. In 1912, the lock changed hands, going to the Alabama and New Orleans Canal Company. Subsequently, in 1918, the canal and lock was leased to the Mississippi-Warrior Service for \$20,000 per year (House of Representatives 1937:7).

The Poydras Crevasse in 1922, just after the canal had been dredged earlier that year threw "a 6.5 miles an hour current through the waterway and carrying a large amount of detritus into Lake Borgne, again forced the redredging of the entrance channel" (House of Representatives 1937:16). In 1923, the lease with the Mississippi-Warrior Service was terminated.

Subsequently, the National Ship Building Company purchased the canal but the company's bankruptcy in 1923 returned its control to the owners of the Alabama and New Orleans Canal Company. In 1927, as a result of the great Mississippi River flood, the levee at Caernarvon was blown up to protect New Orleans and causing the Lake Borgne Canal to be filled again with silt.

In 1936 local interests, concerned with the canal and the local economy, requested that the Corps of Engineers improve the Lake Borgne Canal. Various reasons are cited as to the advantages of the Lake Borgne Canal over the Industrial Canal located further upstream. First, the toll charges were less and the time required to navigate the Lake Borgne Canal was shorter than that required of the Industrial Canal; and second, the Violet Lock, as the Lake Borgne Canal Lock was called, was open all night when the Industrial Canal was closed (House of Representatives 1937:17).

The Corps of Engineers recommended construction of a channel 6 feet deep from Violet to Lake Borgne with a width of 80 feet in the canal and a turning basin 100 feet wide and 200 feet long at Violet. Estimated cost

was \$52,000 with a maintenance cost of \$5,000 per year for the first three years and \$3,500 in later years. The local interests would in return develop a public terminal and keep the Violet Lock open to a depth of at least 6 feet (House of Representatives 1937:2). This project was authorized by the River and Harbor Act of 1937 and completed in 1939.

In 1947 the Violet Lock became inoperative. According to a Corps of Engineers report "the lock is in bad order and the forebay, lock chamber, tailbay have become silted to such an extent that the gates cannot be operated at present" (Annual Report of the Chief of Engineers 1947:949).

The Lake Borgne Canal and Lock, at the time of its construction, was a very important addition to the navigation routes south of New Orleans. Before completion of the Industrial Canal in 1923, Bayou Dupre was the only outlet eastward from the Mississippi River (House of Representatives 1937:16). Freight was carried along the canal for 43 years. On a national level it is difficult to claim that the Lake Borgne Canal Lock is a significant property although on a local basis it made an important contribution to navigation and economic development in the area south of New Orleans during the first half of the 20th century.

From an engineering perspective, it is neither unique nor representative of any advances in canal technology. The significance of the canal lock, therefore, lies in its contributions to local events that have shaped the patterns of Louisiana economic history. From a local standpoint the canal lock may be eligible for nomination to the National Register.

Transportation. The Seatrain Terminal, site 16PL87, is the only historic property placed within this category. The terminal was constructed in 1927-1928 as part of the first containerized cargo system ever developed. The concept was that of Graham M. Brush and Joseph Hudson, Sr. of Overseas Railroad, Inc. In 1933, the company's name was changed to Seatrain Lines, Incorporated (William Weber, personal communication).

The terminal was built for loading freight and tank cars onto a specially designed ship, the Seatrain, that sailed weekly to Havana, Cuba. Special cranes, still standing, with a 100 to 125 ton capacity were constructed at the terminal. Railroad cars filled with general cargo were loaded on to the ship. On the return trip the railroad cars, loaded at a similar terminal in Havana, were filled with agricultural products such as pineapples and sugar. As the Seatrain line expanded during the 1930s and early 1940s, several new vessels were built, the Seatrain Texas, Seatrain New Jersey, Seatrain New York, and Seatrain Havana. Several of these ships were utilized in the American war effort during World War II. The Seatrain Texas, in fact, played a vital and heroic role in British General Bernard L. Montgomery's victory over Nazi Field Marshall Rommel at El Alamein in North Africa in September, 1942 (Winchester 1951:n.p.).

Seatrain Lines discontinued their New Orleans-Havana operation, prior to Fidel Castro's takeover, because of labor and political problems in Cuba (William Weber, personal communication). Today, the terminal and associated cranes appear to be in good condition; part of the trestle, however, was burned during the 1960s (Dan Rosin, personal communication).

Although development of the first containerized shipping system was an important step in rapid efficient freight transportation, it did not involve any technological breakthroughs or unique engineering, nor is the terminal associated with any historically significant people. There is some question, however, as to the effect of containerized shipping upon the broad patterns of United States commercial history. Given the obvious pioneering role of the Seatrain Line in this field, further research is required before the terminal can be judged potentially eligible for nomination to the National Register.

Residential. Two adjacent structures, WP5-7, located in the Poydras Revetment survey item were the only residential buildings inventoried during the project. The two structures are less than fifty years of age. Because of their irregular design they cannot be identified with any regional architectural style. The nature of the structures, however, indicates that they were not squatters' cabins. Both buildings sit partially on pilings driven into the batture implying that at least a minimum of labor and planning was applied to their construction.

The buildings may have been functionally related to the Lake Borgne Canal Lock; perhaps they served as the keeper's house. By reason of their age of less than fifty years and their lack of architectural or historic significance, site WP5-7 is not considered eligible for nomination to the National Register.

Building support. Three sites, 16SB104, 16PL85 and 16SJ32, were associated with brick piers, presumed to have served as structural supports. The sites were originally located at a greater distance from the river than they are now. This conclusion is based on their locations relative to river bank changes of the 19th and 20th centuries. The original structures may have been moved to a different location, leaving just the brick piers.

Shovel testing was carried out at sites 16SB104 and 16PL85 to determine the nature of subsurface remains. At site 16SB104, located in the Poydras item, artifacts were very scarce. Some miscellaneous nails, dating to both the 19th and 20th centuries, were the only artifacts recovered. The site could not be documented with historic records or maps. Its archeological research potential appears poor. Since the site does not conform to the Department of Interior's criteria for significance it is not considered eligible for nomination to the National Register.

Site 16PL85, located in the Alliance item, is similar in that it also consists of brick piers that could not be documented by historic records or maps. Unlike site 16SB104, however, artifacts were very abundant, dating the former structure from the early to mid-19th century. The archeological research potential for this site to yield new information on local history appears very high and, on that basis, it may be eligible for nomination to the National Register.

Site 16SJ32, located at the Rich Bend study area, consisted of two low brick structures very similar to the navigation light supports reported earlier. However, unlike the navigation light support site,

16SJ32 could not be associated with either a present or previous light. It is possible, therefore, that the piers could have supported some other small, specialized structure. It is clear because of the supports' small size, close proximity, and their lack of neighboring piers that they did not support a large structure. Like the other sites in this class, 16SJ32 could not be documented by either historic records or maps. The site does not conform to the Department of Interior's criteria for significance and, therefore, is not considered by the Institute as potentially eligible for nomination to the National Register.

Industrial. Site 16OR68, the brick furnace located at the Cutoff Revetment item, is the only site included within the industrial category. Because of the historic importance of the Cutoff Revetment item, considerable research has been undertaken to identify the furnace and to associate it with either the historic events that took place there or with one of the local plantations. The historic background to the Cutoff Revetment is detailed in Chapter 3. In the following, only those facts pertinent to the furnace site are presented.

The historic literature cites two brick structures in the Cutoff area said to have played a role in the Battle of New Orleans. American Commodore Daniel T. Patterson's marine battery was stationed on the West Bank in an old lime kiln downstream from Jackson's lines. The kiln cannot be identified with a specific plantation; however, Dixon (1965:14) located it "on the riverfront between the Jourdan and Castanedo plantations," thereby, putting it near the site of the present Intracoastal Waterway's outlet to the Mississippi River. This locale is situated upstream from the furnace site.

In another reference to the Battle of New Orleans, General Jackson was said to have been supported in his defenses

...by two naval vessels on the river which harassed the British positions. The "Carolina" was a well-armed schooner; the "Louisiana," although larger, had less fire power... As the "Carolina" and "Louisiana" fired away at the British encampment or moved about the river, residents of the west bank frequently came to the water's edge. On December 27 (1814), they gazed in horror as the "Caroline" was blown up near the west bank in front of the Morin Plantation. The gallant vessel had fallen victim to the British batteries mounted near the riverside on the LaRonde Plantation... His ship destroyed, Captain John D. Henly, of the "Carolina" took command of a square redoubt formed by a brick kiln, on the west bank slightly downstream of Jackson's line. A ditch 25 feet wide was dug around it and it was furnished with two 24-pounders and a powder magazine (Dixon 1965:4-5; emphasis supplied).

In later 19th century maps, a brick powderhouse is marked as lying on the upper limit of the Andry Plantation (Zimple 1834; Mississippi River Commission 1893). This structure may be the same as that which Henly used for a fortification and magazine. The "Carolina" was blown up in front of Morin's Plantation, adjacent to and upriver from Andry's. Henly went ashore at that point. The question is whether this structure is the same as the furnace site inventoried at Cutoff.

The powderhouse is illustrated on the maps as being located on the boundary line between Andry's and Morin's plantations, putting it on the boundary of sections 10 and 11 of Township 13R and Range 25E or at River Mile 87.2, upriver from the furnace site located at River Mile 86.7. If the relative location of these structures is correct, then they are not one in the same.

Riverbank changes occurring at the Cutoff item must also be considered. According to the Institute's riverbank analysis, presented in Chapter 2, nearly 1,200 feet of erosion since 1853 occurred on the boundary between sections 10 and 11 where the powderhouse was presumed to have stood. After 1879, the powderhouse is no longer illustrated on Mississippi River maps. because of the severe erosion along the bank, it has in all probability disappeared into the river, reinforcing the conclusion that the powderhouse and the furnace site are not the same structures.

The key to the furnace site's identification lies in the agricultural developments, particularly that of sugar, along the West Bank. The Andry and Stanton plantations were the major sugar producers of New Orleans Parish during the late 19th and early 20th centuries. Property lists pertaining to these plantations were examined but nothing similar to the furnace site was mentioned in them (Orleans Parish Conveyance Office Books 1888, 1894, 1899, 1900).

The Stanton Plantation, which included the former Andry property, was the largest of its kind in New Orleans Parish (Dixon 1971:59). Its sugar house, illustrated in Plate 24, was a massive structure with a capacity of 500 tons per day (Dixon 1971:59). In 1894 it lay approximately 1,000 feet from the riverbank levee (Mississippi River Commission 1893:Chart 77).

Erosion and a levee break early in the 20th century caused the river to inundate the plantation (Dixon 1971:59). Today, nothing is left of the former plantation or sugar house except, perhaps, the furnace site. An early photograph, reproduced in Plate 25, illustrated the precarious situation of the plantation house after the levee break.

Iroquois Research Institute has concluded that because the furnace site is located in the same locale as the plantation complex, and because of the severe bank erosion in this area, that the furnace is probably the last surviving remnants of the old sugar house.

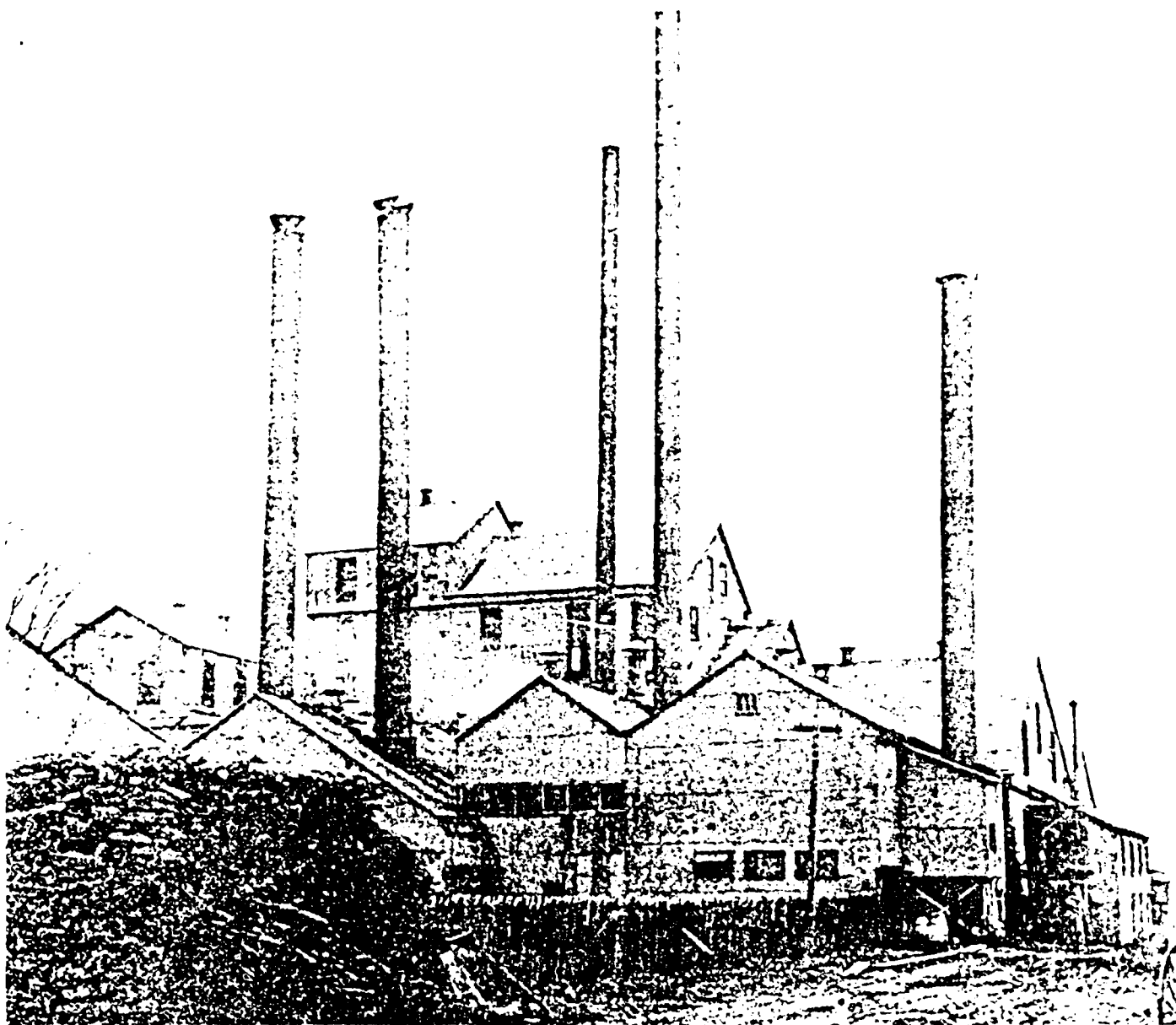


Plate 24. The Stanton Plantation sugar house as seen from the levee. Site 160R68 is believed to be the base of one of the stacks emerging from the facility's roof (from Dixon 1971).

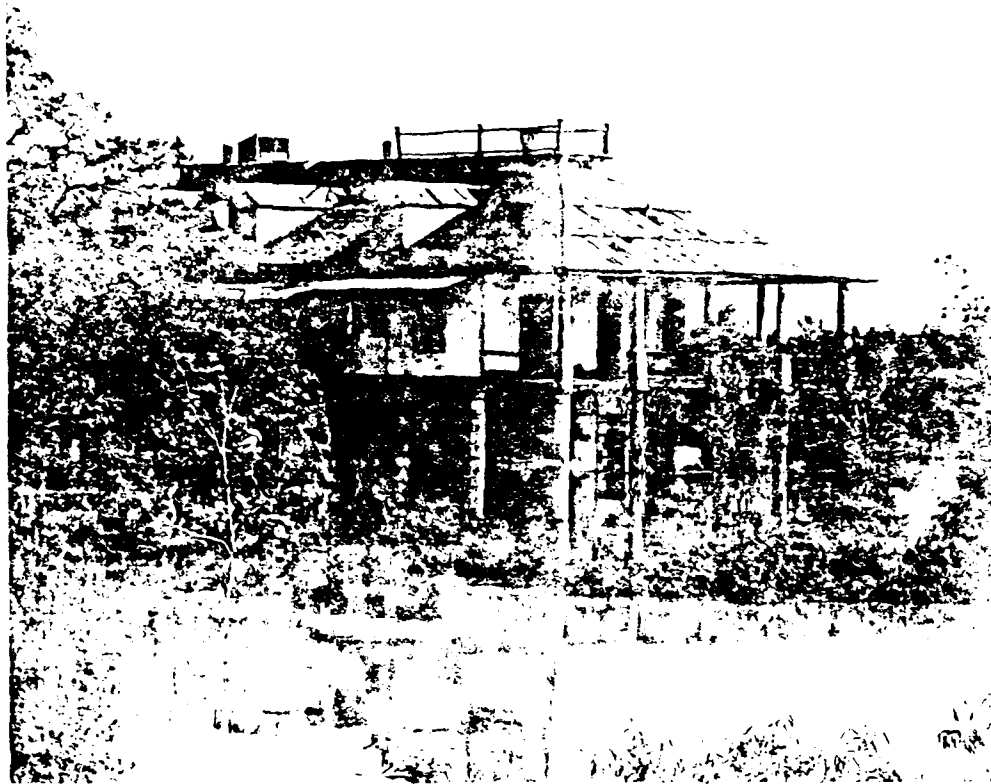


Plate 25. The Stanton Plantation house and the encroaching river, circa 1912 (from the files of Samuel Wilson, Jr.).

Sugar processing requires considerable heat provided by huge furnaces marked by the large stacks illustrated in Plate 24. The furnace site may be the base of one of these stacks. Evidently, the furnace was too massive to remove when the last shoreline revetment was constructed.

The Stanton Plantation played a very important role in the economy of Orleans Parish. It is difficult, however, to claim that it contributed to the broad patterns of national or local history as there were many sugar plantations located along the Mississippi River. The site itself does not have any unique technological or engineering attributes. The remains of various similar furnace structures are visible in the area just below the Cutoff Revetment item (Thomas Ryan, personal communication). The archeological potential of the site is very poor. As stated above, the furnace was probably too massive to remove during the last revetment construction so it was left in situ. The area around it, however, has been greatly disturbed by levee and revetment construction. Shovel tests around the structure yielded ceramic drainage pipe and tile fragments that are difficult to functionally associate with the site. Given the above qualities, the furnace site is not eligible for nomination to the National Register.

Water acquisition or removal. Site 16SJ33, at the Rich Bend Revetment item, and site 16SB106, at the Poydras Revetment item, have been tentatively identified as pump house remains. Site 16SJ33 is probably of 20th century vintage, as evidenced by the presence of cinderblocks. Site 16SB106, a concrete platform, was surrounded by water and was eroding into the river. Both sites were identified by local residents as associated with pump houses. Neither site could be attributed to any historic person, place or event. Shovel tests at site 16SJ33 yielded only a plastic fragment. As mentioned above, site 16SB106 was surrounded with water. Thus, neither site suggests any archeological research potential. They appear not to be eligible for nomination to the National Register.

Unknown. The function of two sites could not be ascertained: site WP5-5, a wooden platform located at the Alliance Revetment item; and site 16PL86, located at the Live Oak item. The wooden platform is most certainly less than fifty years old, given the good condition of its wooden two by four beams and indoor-outdoor carpet covering. It appears ineligible for nomination to the National Register.

Site 16PL86 was the only site found in a subsurface test, an auger boring in this instance. It lay in a stratum approximately 90 centimeters from the surface. Structures or other historic associations attributable to this area could not be documented through historical research. From the soils analysis presented in Chapter 5, the Institute has hypothesized that the artifactual remains, consisting of brick and ceramic fragments, are a secondary deposit. Given that the site is not in situ, thus not possessing integrity, it appears ineligible for nomination to the National Register.

CHAPTER VII

RECOMMENDATIONS

Recommendations for Historic Preservation

Only two of the inventoried properties, the Lake Borgne Canal Lock, site 16SB105, and the brick piers, site 16PL85, have been evaluated by Iroquois Research Institute as potentially significant, thus, requiring further recommendations.

A third property, the Ashton Plantation, located adjacent to the Luling Revetment, may be associated with the development of tile field drainage, considered by agricultural experts as a significant technological innovation. Although no adverse impact is implicated and mitigation is not necessary, the Institute has presented recommendations for further research.

16SB105. The canal lock, as explained in the previous chapter, can only be attributed with significance on the local level. Because the riverside half of the lock has since disappeared, having probably eroded away, it does not possess the complete integrity that the Department of Interior's criteria for eligibility require. Nevertheless, Iroquois believes that the structure and the canal are sufficiently significant to warrant the placing of an historic marker that notes the lock's location and its contribution to the local economy of the Violet-Lake Borgne area. Iroquois does not recommend it for nomination to the National Register.

16PL85. The brick piers and surrounding site are potentially eligible for nomination to the National Register on the basis of criteria "d," its potential for yielding information important in prehistory or history. Ceramics recovered in shovel tests date the site to the late 18th through the 19th centuries. Archeological sites of this vintage have not been excavated heretofore in Plaquemines Parish.

Research questions that might be answered by secondary excavation are difficult to specify without knowing the kinds of retrievable data at the site. Shovel testing performed by Iroquois Research Institute has confirmed the presence of subsurface remains to at least a depth of 30 centimeters and have identified a tentative temporal range for the occupation.

If the site dates to the late 18th and early 19th centuries it may contain valuable data on the material conditions during the Spanish-American transition and during a period when sugar planting was becoming an important economic force in Louisiana. After the 1790s, there was a

large influx of Americans to Louisiana and this site, because of the English-made ceramics, may pertain to a new resident of the region. The site's function and, if it was a residence, the socio-economic class of its inhabitants might be ascertained by further excavation.

Iroquois Research Institute recommends that the site be subjected to further testing to determine its potential significance. Furthermore, an intensive records search in the parish courthouse and other relevant archives should be undertaken to determine the property's historic associations.

Ashton Plantation. John A. Morris, owner of Ashton Plantation located adjacent to the Luling Revetment, has been recorded as being an innovator of tile field drainage, experimenting with it to increase sugar yields. The great significance of this technology to modern United States agriculture has been referred to in the section entitled, Historic Developments in the Study Area. The importance of this invention and the role of John A. Morris should not be overlooked particularly because there is much uncertainty concerning where and by whom the technology developed (Huff, personal communication). Iroquois Research Institute considers this subject worthy of additional research; however, additional work in relationship to Luling Revetment construction is not recommended.

Recommendations for Further Research

Today's Mississippi River batture is essentially a man-made environment created between the river's edge and the artificial levees paralleling the river. Construction, regular maintenance, and reconstruction of the levees and revetments have aided in maintaining a pioneer succession of willows and cottonwoods by creating a severely disturbed environment wherein natural processes of erosion and deposition have been and continue to be altered. Unless a levee is constructed at substantial distances from the river, as at the Rich Bend Revetment item, the ecological succession rarely has time to proceed through the usual natural stages. Once the batture is eroded away by the river, there is a need to initiate a levee setback. Where a point bar formation is the predominant fluvial process, the batture ecological succession, unless disturbed by severe flooding or human interference, usually permits an evolution beyond the willow stage.

Modern land-use patterns within the batture reflect the environment's dynamic nature. Permanent residential structures and commercial buildings such as offices or warehouses are rarely found, particularly where significant riverbank erosion occurs. Those commercial structures located within the batture, such as shipyards, docks, and loading platforms, are generally associated with river commerce and navigation. More direct use of the batture is evidenced by dumping activities, limited grazing, hunting and fishing. The general impression is that the batture is a zone of low density development and specialized land use related predominantly to river transportation.

Evidence gathered by Iroquois during this project and in previous surveys (Iroquois Research Institute 1980b, 1980c) indicates that land-use patterns in the historic past were not radically different although less diversified. The cultural resources inventoried for these projects are summarized in Table 7. Of 19 sites discovered by Iroquois for Work Packets 2, 3, 4, and 5, nine were related to river transportation, navigation, or water acquisition or removal. The others were related to industrial concerns, erosion control, trash dumping, or structures. Structural remains, because they are located in zones of erosion, appear functionally unrelated to batture land use, and were located well back from the river when originally constructed. Erosion over the years, as well as levee setbacks, have increased their proximity to the river. In certain cases, where building piers were found, the former structures may have been moved prior to a levee setback or because of the river's intrusion.

TABLE 7

Summary of Cultural Resources Discovered in the Batture by Iroquois Research Institute
for Work Packets 2,3,4 and 5

Work Packet	Site Number	Description	Functional Category
2	16SJ31	wooden retaining wall	erosion control
3	WP3-1	modern trash dump	trash dump
3	16JF136	brick/artifact scatter	structure or trash dump
3	WP3-3	modern concrete slab	industrial
3	16JF137	ship hull	transportation
4	16PL83	dock fragment	river access
5	WP5-1	catwalk	river access
5	16OP69	furnace	industrial
5	16SR104	brick piers	structural support
5	WP5-5	modern wooden raised platform	unknown
5	16PL85	brick piers	structural support
5	WP5-7	residential structures	residence
5	16SR105	canal lock	navigation
5	16SC47	concrete navigation light base	navigation
5	16SJ32	brick piers	structural support
5	16SJ33	concrete block scatter possible pump house	water acquisition
5	16PI86	subsurface artifact and brick scatter	unknown
5	16SR106	pump house foundation	water acquisition
5	16PI87	Sea train terminal	transportation

19 Total

The investigation of when and under what circumstance levee setbacks have occurred should be a significant feature of cultural resources investigations of the Mississippi River batture. Occurrence of a set-back implies that erosional processes were threatening the batture and levee, that significant land disturbance occurred during the construction of the new levee, and that important structures may have been moved away from the levee.

Unfortunately, the ability to document levee setbacks is a difficult and often impractical task. The records are not centralized and in many instances could not be located within the time constraints of the project. Iroquois recommends that a separate historical investigation of levee construction be sponsored so that the results could serve as a baseline for future Mississippi River cultural resources investigations. An historical and archival study prepared for the Vicksburg District Corps of Engineers (Smith 1981) could serve as an example of an investigation designed to provide baseline data for future cultural resource, environmental and geotechnical studies.

Cultural resources inventoried by Davis et al. (1979) reflect results similar to those of Iroquois. They recorded 23 sites, 18 of which were secondary artifact deposits that were present due to flood deposition or dumping. The remaining five sites pertained to nautical, industrial, military and residential activities. Changing spatial relationships between the cultural resources and the batture resulting from erosion were not examined in their report.

Historic background research by Iroquois Research Institute has documented that, in the past, agricultural land use along the Mississippi River in southern Louisiana has been the major emphasis. River transportation was extremely important for moving sugar cane and other agricultural products to sugar refineries or markets. As the industrial importance and population of New Orleans and areas to the north have grown, the nature of industrial activities has diversified and the size of population centers has increased.

The preponderance of modern industrial facilities and garbage dumps observed during the cultural resources inventory supports this contention. The review of historic maps also reflected these changes. Mississippi River Commission maps of the late 19th century, for example, illustrated a large number of plantations close to New Orleans. Today they no longer exist. Instead, large refineries, factories, and settlements have appeared. The changing impact upon the riparian land of the Mississippi River by this development is clearly evident.

Absence of prehistoric sites from cultural resource inventories conducted within the batture results from several factors. The present land surface along the river south of New Orleans, composed of recent alluvium, is relatively young and probably does not contain cultural remains older than approximately 700 years (Saucier 1974). Subsidence has made the present land surface even younger than the estimated ages of the subdeltas. Prehistoric sites occupied 1,000 years ago, as a result of subsidence, would now lie as much as 20 feet below the present land surface. Furthermore, extensive deposition and erosion occurring along the river would have rapidly buried or destroyed exposed prehistoric sites. Disturbance by construction along the river may have also contributed to their destruction.

A substantial body of data, summarized in Table 8, is now available for evaluating the effectiveness of intensive cultural resource batture surveys. The studies embrace 202 linear kilometers of batture.

TABLE 8

Summary of Batture Surveys

Researcher and Source	Number of Linear Kilometers Surveyed	Number of Cultural Resources Invented Within Batture
Shenkel (1977a, 1977b, 1977c, 1977d, 1977e, Louisiana State Site Files)	27	2*
Rader (1978a, 1978c, n.d.)	16	0
Davis et al. (1979)	71	16
Iroquois Research Institute (1980b, 1980c, Work Packet 5)	88	19
Total	202	39

*These sites were not discovered within Shenkel's 27 kilometers. They were recorded in the Louisiana State Site Files.

Measuring the success rate of these inventories is very difficult. In most cases, the earlier investigators have not sufficiently described their field methodology so that adequate comparisons of their results are possible. Since the Iroquois surveys have incorporated a consistent methodological approach within an easily quantifiable framework, they form the best basis for discussion.

Initially, Iroquois Research Institute's (1980b, 1980c) research expectations were conservative, largely because geomorphological factors, human disturbance, and light intensity land use appeared to indicate that cultural remains would be scarce. Contrary to these expectations, intensive systematic surveys in the batture have yielded a fair quantity of sites. Nineteen were recorded for all the Work Packets surveyed by Iroquois Research (1980b, 1980c), including the present project. Although ten of these sites, approximately have the inventory, pertained to secondary trash deposits, modern commercial and river related structures, erosion control and modern residences, the remaining inventory consisted of interesting, and some potentially significant, architectural and archeological sites.

The need for systematic intensive batture surveys is apparent. Although many of the sites could have been discovered during a simple pedestrian walk-over reconnaissance along the levee and riverbank, there were five archeological sites that would not have been found had it not been for the closely spaced transects walked during the systematic, intensive survey. One of these sites, 16PL85, has been recommended for further investigation.

The question of systematic subsurface testing and its effectiveness in batture surveys requires further evaluation. In previous Iroquois studies, shovel testing was believed to be an unprofitable means of locating subsurface remains. This method was even less profitable in the batture because of the large amounts and rapid rates of silt deposition and because of the continuous scatter of modern garbage (Iroquois Research Institute 1980b, 1980c). Given that modern remains will be found in a majority of shovel tests means that site verification effort will be greatly increased and wasted. Furthermore, older materials and archeological sites are, in most areas, located deeper than the average shovel test will penetrate.

In an attempt to deal with this problem during this performance, Iroquois Research Institute utilized a combination of shovel testing and deep augering in areas that, because of their physical characteristics, appeared to have the best potential of containing buried in situ cultural remains. This approach is explained in Chapter 4. The results of the subsurface testing were not promising. No sites were discovered in shovel tests, but one site was discovered in an auger boring. Because of the poor results associated with shovel testing, the Government may wish to reevaluate this procedure for future batture surveys. This suggestion does not preclude shovel testing for site verifications.

Auger boring may have a greater potential for revealing buried sites; but, since the single site discovered during this project may have been fortuitous, the method needs further evaluation. Because hard compact clays in the batture make augering a very difficult and slow method, Iroquois Research Institute recommends that power augers be authorized for future projects.

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APPENDIX A

Sample Soil Borings Made During Subsurface Testing

Location: Richbend, on Shovel Test Transect T-48, approximately 1680 meters from the upstream limits of the Poydras Revetment study area, and about 35 meters from the borrow on the graded batture.

Designation: Auguer Boring B

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 3 cm	Dark grayish brown (10YR4/2) loam
3 - 58 cm	Very dark grayish brown (10YR3/2) silty clay with strong medium subangular blocky structure, changing abruptly to:
58 - 92 cm	Dark grayish brown (10YR4/2) sandy loam.

Interpretation:

The three-centimeter surface stratum of loam is undoubtedly the result of recent deposition from overbank flooding, a stratum of consistent thickness and presence in the vicinity. The deepest stratum of sandy loam was likely laid down as a point bar deposit, and since point bar areas also typically have swales between point bar ridges, the silty clay strata could have been deposited at a later date in a swale. Since several hundred years are usually required for development of the well developed soil structure found in the silty clay strata, the likely age of the sediments here is a minimum of 500 years.

Location: Poydras, approximately 335 meters from the downstream limits of work and 366 meters from the levee, within the widest part of the batture (crevasse area).

Designation: Auguer Boring WP5-P-A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 15 cm	Brown (7.5YR3/2) firm silty clay loam
15 - 90 cm	Grayish brown (10YR4/1) firm silty clay faintly mottled with reddish brown (10YR3/4). No water table encountered.

Interpretation:

The texture and degree of soil profile development at this location indicate that it is probably the former location of a distributary river channel or crevasse, likely predating the historic period in age.

Location: Concession, 1505 meters from the downstream limits of the study area, approximately 60 meters from levee.

Designation: Auger Boring T-30-A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 16 cm	Very dark gray (10YR3/1) sandy loam
16 - 33 cm	Brown (10YR5/3) sandy loam with clamshell fragments from 33 to 43 cm.
33 - 66 cm	Grayish brown (10YR3/2) silt loam
66 - 88 cm	Brown (10YR4/3) silt loam

Interpretation:

Soil colors and textures, together with the clamshell, all indicate that sediments here have been deposited quite recently from relatively swift water during periods of overbank flooding.

Location: Concession, approximately 1,330 meters from downstream
limit of study area, 30 meters from levee.

Designation: Auger Boring T-38-A

Description:

Depth

0 - 107 cm

Soil Characteristics

Brown (10YR3/2) clay, moderate medium
subangular blocky structure

Interpretation:

Although the sediment here may be the result of the filling of a
quite old borrow pit, the most likely environment of deposition was
backswamp. A levee setback would then account for this area being
presently in the batture.

Location: Alliance, approximately 170 meters from the downstream limits of the study area, 60 meters from levee.

Designation: Auger Boring T-4-A

Description:

Depth

0 - 110 cm

Soil Characteristics

Brown (10YR4/4) sand, loose in bottom and would not remain in auger in ground water which was encountered within 15 cm of surface.

Interpretation:

The loose, relatively clean sand indicates recent deposition from relatively swift water. The presence of a large amount of heavy driftwood confirms that this area is periodically subject to strong flood water currents. The sand has likely been deposited in an old borrow pit.

Location: Port Sulphur - downstream segment, approximately 70 meters from the downstream limits of the study area and 70 meters from the levee.

Designation: Auguer Boring T-2-A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 55 cm	Brown (10YR3/2) fine sandy loam
55 - 75 cm	Dark brown (10YR2/2) silty clay loam mottled with specks of dark red (10YR4/8). Strong, medium subangular blocky structure.
75 - 80 cm	Gray (10YR3/2) silty clay loam
80 - 107 cm	Very dark gray (10YR3/2) clay

Interpretation:

The surface stratum is from recent overbank flooding by relatively swift water. The subsurface strata were most likely deposited in the quiet waters of a backswamp environment, since they are made up entirely of fine textured sediments. River migration or a levee setback would account for these materials now being in the batture.

APPENDIX B

Sample Borings from Sites 16SJ33, 16OR68, 16PL85, and 16PL86

Two auger borings were performed at site 16SJ33, one at 16OR68, two at 16PL85, and 11 at 16PL86. Descriptions of those borings not in this appendix can be found in the Background Data volume. The locations of all borings are plotted on maps also included in the Background Data volume

Location: Rich Bend, five meters east of datum of historic site
16SJ33

Designation: Auger Boring A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 5	Brown (10YR5/3) loam
5 - 25 cm	Very dark grayish brown (10YR3/2) silty clay loam with strong, medium subangular blocky structure, grading gradually to:
25 - 36 cm	Very dark grayish brown (10YR3/2) silty clay with strong subangular blocky structure, grading abruptly to:
36 - 65 cm	Brown (10YR5/3) silt loam without discernible structure
65 - 92 cm	Grayish brown (10YR5/2) sandy loam, very compact and containing a zone of a few small, smooth pebbles at about 70 cm, changing abruptly to:
92 - 104 cm	Dark gray (10YR4/1) silty clay

Interpretation:

Although the interlayering of fine and coarse sediments found in this boring could occur at the seaward edge of the forming delta, the most probable past setting was a point bar deposit area of the present meander belt, since the gravel present is typical of stream beach lines and the succession of fine and coarse materials could have been laid down in a successive evolution of point bar ridges and swales. The well-developed structure in the near-surface silty clay strata indicate that these sediments have been in place for as long as perhaps 500 years.

Location: Cutoff, histroic site 16OR68

Designation: Auger Boring

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 5 cm	Brown and grayish brown friable clay loam mixed with shell and brick fragments
5 - 31 cm	Brown (7.5YR) very firm clay
31 - 63 cm	Brown (7.5YR) very firm clay mixed with small brick fragments. Auger refusal on brick at at 63 cm, confirmed by color of cuttings and manual examination of bottom of auger hole.

Interpretation:

The artifacts mixed at random in the soil profile indicate disturbance to a considerable depth or that this is a secondary deposit. It could not be determined if the artifacts present were deposited as the furnace was being built or at some later date. The clay texture indicates deposition of the original sediment in relatively quiet water such as might occur in a backswamp or interdistributary marsh. This area was probably included in the batture by a relatively recent levee setback.

Location: Alliance, historic site 16PL85

Designation: Auger Boring A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 15 cm	Black (10YR3/1) clay loam mixed with brick fragments
15 - 114 cm	Brown (10YR4/2) clay, faintly mottled below about 75 cm with gray.

Interpretation:

The dark colored surface horizon is typical of organic matter accumulation at several kinds of occupation sites. The beginning of mottling in the subsurface is an indication of an older age for that stratum as well as possible changes in ground water levels and frequency of flooding caused by subsidence and a levee setback that caused this older land area to be included in the man-made batture. The dark colored surface horizon was probably originally thicker but has been recently eroding.

Location: Live Oak, at downstream limit of work, site 16PL86

Designation: Auger Boring T-1-A

Description:

<u>Depth</u>	<u>Soil Characteristics</u>
0 - 20 cm	Brown fine sandy loam without noticeable structure
20 - 54 cm	Grayish brown silt loam without noticeable structure
54 - 64 cm	Very dark gray silty clay with weak subangular blocky structure
64 - 90 cm	Very dark grayish brown clay with strong medium subangular blocky structure
90 - 122 cm	Dark gray clay with moderate medium subangular blocky structure

Interpretation:

See Chapter 5 for discussion of environment at historic site 16PL86.

APPENDIX C

ABOUT THE AUTHORS AND CONTRIBUTORS

Cecil R. Brooks, Senior Environmental Analyst, received his Ph.D. in Plant and Soils Science from Texas A & M in 1966. He has been the principal investigator for plant and soil science studies and for environmental inventories throughout the United States: Alaska, California, Utah, Kansas, Missouri, Texas, Arkansas, Louisiana, Tennessee, Kentucky, Virginia, Maryland, and the District of Columbia. Dr. Brooks has valuable experience in participating in complex interdisciplinary programs and is co-author of several recent cultural resource reports.

Nancy N. Brown, Historian, is an M.A. candidate in American Civilization and Museum studies at George Washington University. Ms. Brown has had considerable experience in the Historic Preservation field and is currently carrying out historic research in food habits of the 19th century Americans. Among her specialties are historic material culture and historic urban studies.

Douglas H. Edsall, Geologist, received a Ph.D. in Marine Geology from Columbia University in 1975. Dr. Edsall is experienced as a geomorphologist and quaternary geologist. Certified by the Association of Professional Geological Scientists, he has performed as principal investigator of fluvial features, geological formations and their chronological association with cultural features. He has been involved with the study of geomorphology to cultural resources in the Lower Mississippi River Valley for four years.

Adam G. Garson, Senior Archeologist, received his Ph.D. in Anthropology from Yale University in 1980. Dr. Garson is experienced in research design and project supervision. He has conducted excavations, surveys, and research in New York, Connecticut, Delaware, Maryland, Arizona, Louisiana, the West Indies, and Venezuela. Dr. Garson is skilled in artifact analysis, ecological studies, and statistical methods.

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Sally Kittredge Evans Reeves, Architectural Historian, received a B.A. in English from Newcomb College. She has co-authored several award-winning books in the Friends of Cabildo New Orleans Architecture series. She has also co-authored many local histories and has written research projects in specific local history and architecture for the New Orleans area.

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Louis Vaillancourt, M.S. An historian with concentrated expertise in the historic archeology of 18th century French and British forts in North America. In addition to research in France, the U.S., and Canada, he has been involved with Artillery Park, Quebec; Huronia Historical Parks, and in particular, Ste. Marie-Among-the-Hurons, Ontario; and Park Cartier-Brebeuf for Parks Canada.

Jill-Karen Yakubik, Archeologist, is currently enrolled in the Ph.D. program at Tulane University. She is experienced in historic period ceramic analysis, osteological analysis, surveying and illustration. Ms. Yakubik has contributed to publications on archeological and historic surveys and classification of 19th century ceramics.

Paula A. Zitzler, Archeologist, received her B.A. in Anthropology in 1977 from Indiana University of Pennsylvania. She is experienced in archeological survey, testing, and excavation for both historic and prehistoric sites. She is also experienced in artifact curation and cartography. Ms. Zitzler has participated in survey and test operations in New York, Pennsylvania, Arkansas, Missouri, Louisiana, Delaware, Connecticut and Virginia.

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